Arrangements for:

HNC Shipbuilding

Group Award Code: G95N 15

Validation date: October 2008

Date of original publication: April 2009

Version: 04 (January 2015)

Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

History of changes

It is anticipated that changes will take place during the life of the qualification and this section will record these changes. This document is the latest version and incorporates the changes summarised below. Centres are advised to check SQA's APS Navigator to confirm they are using the up to date qualification structure.

NOTE: Where a Unit is revised by another Unit:

- No new centres may be approved to offer the Unit which has been revised.
- Centres should only enter candidates for the Unit which has been revised where they are expected to complete the Unit before its finish date.

Version number	Description	Date
04	Removal of finish date from unit DG4P 35 *Mathematics for Engineering 3.* Addition of Credit Transfer Table *see Page 14.*	16/01/15
03	**Revision of Units**: D77G 34 *Communication: Practical Skills* revised by H7MB 34. DT5X 33 *Mathematics for Engineering 1: Mechanical and Manufacturing* revised by H7K0 33 *Engineering Mathematics 1*. DG4L 34 *Mathematics for Engineering 2* revised by H7K1 34 *Engineering Mathematics 2* on framework finishing 31/07/2016.	09/10/14
02	*Engineering Mathematics 3* (H7K2 34), *Engineering Mathematics 4* (H7K3 35) and *Engineering Mathematics 5* (H7K4 35) added as optional Units to framework.	21/08/14

Contents

1 Rationale for the qualification

1.1 Introduction

This is the Arrangements Document for the HNC Shipbuilding award, validated in October 2008. This document includes: background information on the development of the Group Award, its aims, guidance on access, details of the HNC Group Award structure, and guidance on delivery.

The new Group Award provides candidates with a course of direct relevance to the modern shipbuilding industry, consequently enhancing opportunities for career access and progression.

This award has been developed under the new SQA Design Principles. The award is intended to replace the previous HN Shipbuilding award G0FN15 which lapsed in 2000. The new award is designed to provide candidates with an understanding of Naval Architecture and Shipbuilding Principles.

The shipbuilding industry (particularly with regard to warships) within Scotland has seen a resurgence of activity in recent years, this as evidenced by the award of the two CVF aircraft carriers to BAE, Babcock Marine and Vosper Thornycroft and the award to build the type 45 Frigates to BAE Systems. With the demise of the last HN Shipbuilding award in 2000 the industry has tried to make use of existing qualifications but in recent years has found this to be increasingly unsatisfactory. Two of the major players in Scotland – Babcock Marine and BAE Systems approached Scottish Enterprise and SQA to see if an appropriate award could be developed.

SQA indicated that due to the specialist market and relatively small numbers of candidates any new award would fit their specialist collaborative category of qualification rather than a nationally developed award. Scottish Enterprise agreed to provide the funding if a partnership could be established between employers and delivering Colleges. Carnegie College provided the lead, working in partnership with BAE, Babcock and Fergusons Shipbuilding and three delivering colleges — Adam Smith, Motherwell and Anniesland.

The employers were looking for a qualification that provided Naval Architecture principles together with a variety of appropriate engineering skills.

This award is the result of the aforementioned collaboration.

This document details the background to the development of the new award, the aims (both general and specific), recommended access requirements, information about the structure of the award and recommendations on delivery and assessment.

1.2 HN Engineering frameworks

In 1996 the SQA validated nationally a large number of new HN Engineering awards. A major difference between these and previous awards was that they all sat within an HN Engineering Framework which in general terms consisted, for both HNCs and HNDs, of mandatory, principles/technology and optional sections. The benefits of this framework structure were seen to include the following:

- the provision of a wide range of HN Engineering qualifications to meet the needs of different engineering sectors
- improved credibility and esteem of individual HN Engineering awards
- the clarification of competencies general to all incorporated engineers and those specific to particular engineering disciplines
- the provision of opportunities for the efficient delivery of HN Engineering Units by, for example, incorporating Units that were common to a number of different HN awards
- the facilitation of better progression between HNC, HND and degree engineering awards

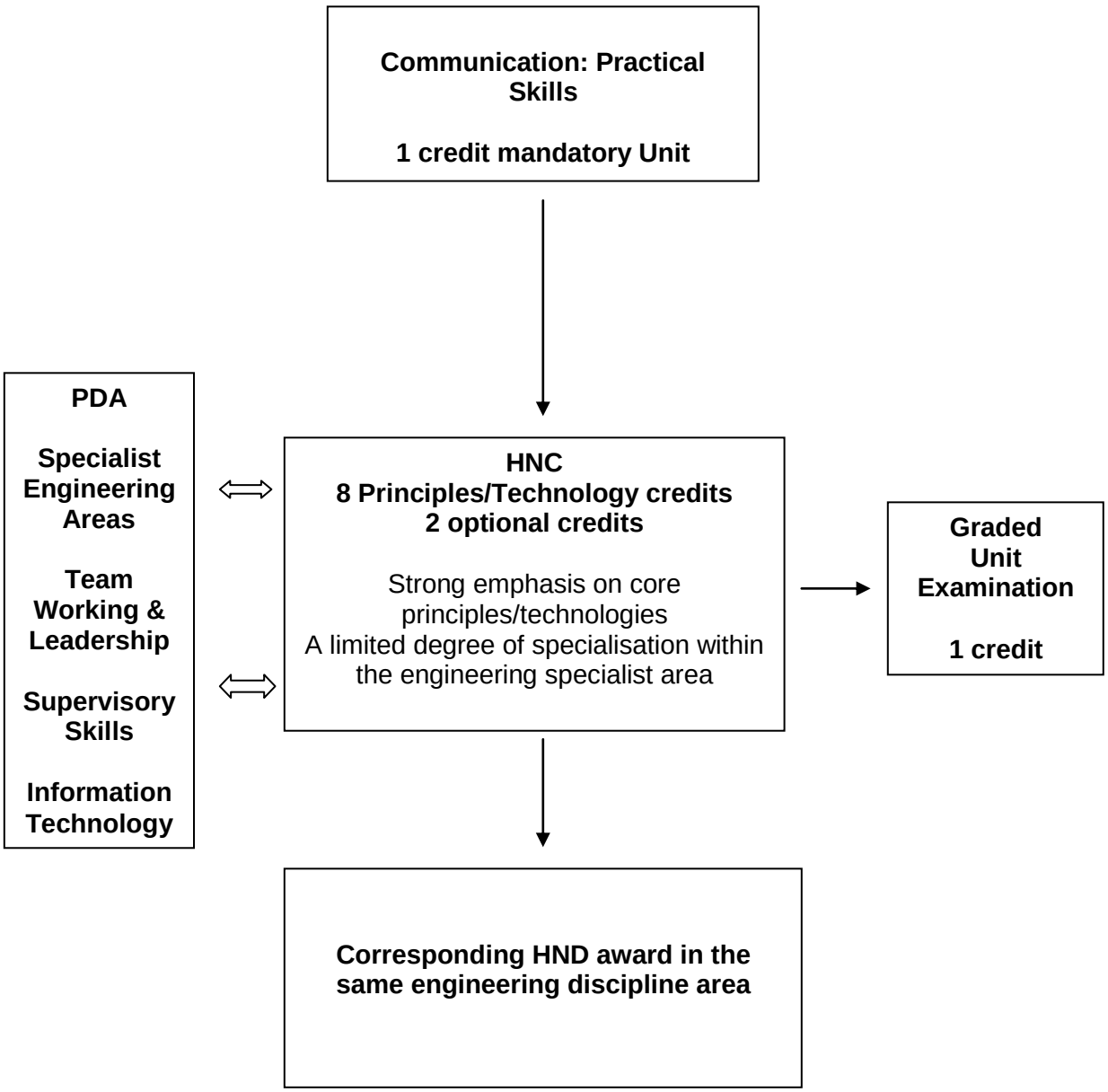
In general, the feedback received by the SQA was that this framework had gained broad acceptance and support from stakeholders of HN Engineering awards. However when the awards were due for revalidation, the SQA regarded as important, before proceeding with the development of individual HN awards, seeing whether stakeholders wished to continue with an overarching HN Engineering framework. Thus, in June 2001 the SQA appointed an HN Engineering Lead Consultant to work on the HN Engineering framework and lead the development of a number of HN Engineering awards under the new SQA draft HN Design Rules.

A decision to review the engineering awards in a phased approach was adopted. The first award to be reviewed was the HNC/HND Electronics.

1.3 Consultation

Before proceeding with the development of this award it was necessary to consult with stakeholders to check if the overarching HN Engineering framework was valid for the HN Shipbuilding qualification.

HNC Shipbuilding framework



Consultation on the framework consisted of the following:

The development of this new award was triggered by the concerns of two major employers (Babcock Engineering Services and BAE systems) that there was no higher level route for their apprentice workforce to progress to once they had completed their NC level studies.

Both of these employers felt that whilst it was appropriate that the NC level award in engineering was suitable when taught in a marine context that the current range of HN Programmes did not provide sufficient specialisation to meet their business needs.

These employers made their concerns known to Scottish Enterprise and SQA. In response to this request Scottish Enterprise through the Scottish Marine Transport Training Project (SMTTP) then initiated the development of this award.

The consultation was broadened out to include Babcock Engineering Services, BAE Systems, Ferguson's Shipbuilding and the MOD.

Broad consensus on the framework for the new award was rapidly agreed as detailed later in this document.

1.4 Market research

The development of the new award included extensive market research as follows:

- The shipbuilding industry has until recently been in decline in Scotland and consequently the last HN level Shipbuilding award lapsed in 2000. The subsequent awarding of the contract for the type 45 Destroyers to BAE Systems and the joint award of the CVT Aircraft Carriers to Babcock Marine, BAE Systems and Vosper Thornycroft has meant that an award in Shipbuilding is once again required. The employers involved started to lobby for the development of a technician level award to suit the needs of their industry. A consortium of colleges was established to look at taking forward the employers request for an HN Shipbuilding award and funding was provided to support the development through Scottish Enterprise.

- Major desk-based research gathering and analysing data from various sources (SEMTA, Future Skills Scotland etc.).

- The framework was circulated to James Watt College, Motherwell College, Anniesland College, Carnegie College, Adam Smith College and SEMTA as well as to BAE Systems, Babcock Marine and Fergusons Shipbuilding.

This consultation confirmed that this award should be broadly consistent with other Engineering frameworks, ie Communications Unit, seven Principles and Technology Units, a Mathematics Unit, two optional Units and a Graded Unit.

2 Aims of the award

The general and specific aims of the HNC Shipbuilding award are provided below.

2.1 General aims

The general aims of this award are to:

2.1.1 enhance candidates' employment prospects
2.1.2 support candidates' Continuing Professional Development and career development
2.1.3 enable progression within the SCQF (Scottish Credit and Qualifications Framework)
2.1.4 develop candidates' ability to apply analysis and synthesis skills to the solution of Shipbuilding problems
2.1.5 develop learning and transferable skills including Core Skills where appropriate

2.2 Specific aims

The specific aims of this award are to:

2.2.1 provide an award that will allow candidates to work now, or in the future, as technicians in the shipbuilding industry
2.2.2 to provide an award that provides both Shipbuilding/Naval Architecture and a range of appropriate engineering skills.
2.2.3 develop an award that on successful completion will allow candidates to progress to an HND Engineering award
2.2.4 develop knowledge and understanding of Shipbuilding and Naval Architecture principles to HN Standard
2.2.5 demonstrate the ability to analyse a range of problems related to Shipbuilding and Naval Architecture
2.2.6 allow a degree of specialisation within the following areas: Mechanical Engineering, Electrical Engineering, Fabrication and Welding; Shipbuilding and Naval Architecture
2.2.7 on successful completion of the award achieve the Core Skill in *Communication* at Higher level and be provided with opportunities to develop the following Core Skills: *Information and Communication Technology; Numeracy* and *Problem Solving*

2.3 Rationale for award

The grid below shows where the Unit specifications match the objectives:

Mandatory Units	Unit number	Objectives
Communication: Practical Skills	D77G34	2.2.4; 2.2.7
Mathematics for Engineering 1: Mechanical and Manufacturing	DT5X33	2.2.3; 2.2.7
Shipbuilding Principles: Planning, Production and Assembly	DR2F34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Shipbuilding Principles: Advanced Hull and Associated Technologies	DR2E34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Ship Stability within Naval Architecture: An Introduction	F503 34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Naval Architecture Ship Construction	F0LF34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Ship Systems — Auxiliary Systems	F43F 34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Ship Systems — Propulsion	F43G 34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Shipbuilding: Fitting out	F43E 34	2.1.1; 2.1.4; 2.2.5; 2.2.6
Shipbuilding: Graded Unit	F521 34	2.1.2; 2.1.3; 2.1.4; 2.1.5; 2.2.1; 2.2.2; 2.2.3; 2.2.5; 2.2.6
Optional Units		
Fabrication Forming Processes	DR2534	2.1.1; 2.2.5; 2.2.6
Welding Procedures: Specification, Qualification and Testing	DR2434	2.1.1; 2.2.5; 2.2.6
Welding Principles and Applications 1	DR2G34	2.1.1; 2.2.5; 2.2.6
Welding Principles and Applications 2	DR1Y34	2.1.1; 2.2.5; 2.2.6
Fabrication: Preparation, Joining and Assembly	DR2C34	2.1.1; 2.2.5; 2.2.6
Fabrication and Welding Materials	DR2H34	2.1.4; 2.2.1; 2.2.5; 2.2.6
Inspection Systems	DR2634	2.1.4; 2.2.1; 2.2.5; 2.2.6
Materials Selection	DT4634	2.1.4; 2.2.3
Statics and Strength of Materials	DR1T34	2.1.2; 2.1.3; 2.1.5;2.2.3
Engineering Principles	DR3L34	2.1.4; 2.2.3
Pneumatics and Hydraulics	DT9X34	2.1.2; 2.1.3; 2.1.5;2.2.3
Engineering: Practical Skills	F1BX33	2.1.2; 2.1.3; 2.1.5;2.2.3
Engineering Project	DR20 34	2.1.2; 2.1.4; 2.1.5; 2.2.1; 2.2.2
Quality Management: An Introduction	DT8Y34	2.1.2; 2.1.3; 2.1.5
Design Analysis: Fabrication and Welding	DR2234	2.1.1; 2.1.4; 2.2.5; 2.2.6
Information Technology: Applications Software 1	D75X 34	2.1.5; 2.2.7
Computer Aided Draughting for Engineers	DR1X34	2.1.2; 2.2.7
Computer Aided Engineering (CAE) and Prototyping	DR1R35	2.1.2; 2.1.3; 2.1.5;2.2.3
Mathematics for Engineering 2	DG4L34	2.1.2; 2.1.3; 2.1.5;2.2.3
Mathematics for Engineering 3	DG4P35	2.1.2; 2.1.3; 2.1.5;2.2.3

3 Access to the award

3.1 Access requirements for the award

It is intended that admission to the award should be as broadly based as possible. The following are offered as guidelines only:

- National Certificate Group Award in Fabrication and Welding Engineering **
- National Certificate Group Award in Engineering **
- A choice of two Highers from Fabrication and Welding Engineering, Technological Studies, Graphic Communication, Craft and Design, Mathematics or Physics
- At the discretion of the centre for applicants with a different experiential background who could benefit from taking the course or individual Units within the course, eg adult returners, overseas students

**NC candidates progressing to this award must hold SCQF at level 6.

3.2 Alternative access arrangements

The centre may operate alternative access arrangements in cases where the candidate is convinced that they already have the required competencies in a given area. These arrangements are as follows:

- Assessment on demand
- Credit transfer
- Accreditation of prior learning
- Relevant and comprehensive work experience

Individual centres must outline their systems for each of these as appropriate.

4 Structure of the award

4.1 HNC Shipbuilding (12 credits)

Mandatory Units (10 credits — one Communication Unit, one Mathematics Unit, seven Technology Units and one Graded Unit)

Core Units	Unit code	Credit value	SCQF level
Communication: Practical Skills	H7MB 34*	1	7
Engineering Mathematics 1	H7K0 33*	1	6
Shipbuilding Principles: Planning, Production and Assembly	DR2F 34	1	7
Shipbuilding Principles: Advanced Hull and Associated Technologies	DR2E 34	1	7
Ship Stability within Naval Architecture: An Introduction	F503 34	1	7
Naval Architecture Ship Construction	F0LF 34	1	7
Ship Systems — Auxiliary Systems	F43F 34	1	7
Ship Systems — Propulsion	F43G 34	1	7
Shipbuilding: Fitting Out	F43E 34	1	7

Optional Units (2 credits)

Optional Units	Unit code	Credit value	SCQF level
Fabrication Forming Processes	DR25 34	1	7
Welding Procedures: Specification, Qualification and Testing	DR24 34	1	7
Welding Principles and Applications 1	DR2G 34	1	7
Welding Principles and Applications 2	DR1Y 34	1	7
Fabrication: Preparation, Joining and Assembly	DR2C 34	1	7
Fabrication and Welding Materials	DR2H 34	1	7
Inspection Systems	DR26 34	1	7
Materials Selection	DT46 34	1	7
Statics and Strength of Materials	DR1T 34	1	7
Engineering Principles	DR3L 34	1	7
Pneumatics and Hydraulics	DT9X 34	1	7
Engineering: Practical Skills	F1BX 33	2	6
Engineering Project	DR20 34	1	7
Quality Management: An Introduction	DT8Y 34	1	7
Design Analysis: Fabrication and Welding	DR22 34	1	7
Information Technology: Applications Software 1	D75X 34	1	7
Computer Aided Draughting for Engineers	DR1X 34	1	7
Computer Aided Engineering (CAE) and Prototyping	DR1R 35	2	8
Engineering Mathematics 2	H7K1 34*	1	7

*Refer to History of Changes for revision changes.

Optional Units	Unit code	Credit value	SCQF level
Mathematics for Engineering 3	DG4P 35	2	8
Engineering Mathematics 3	H7K2 34*	1	7
Engineering Mathematics 4	H7K3 35*	1	8
Engineering Mathematics 5	H7K4 35*	1	8

*Refer to History of Changes for revision changes.

Mandatory Graded Unit

Shipbuilding: Graded Unit 1 (Examination of 3 Hours)	F521 34	1	7

4.2 Graded Unit

The purpose of the Graded Unit is to assess the candidate's ability to integrate and apply the knowledge and/or skills gained in individual Units, to demonstrate that they have achieved the specific aims as detailed in Section 2.2 and to grade candidate achievement.

The Unit consists of a 3-hour examination paper which must be conducted under controlled, supervised conditions. Candidates will be permitted a formula data sheet that will list all the formula found in the Shipbuilding and Naval Architecture Units that are within the mandatory section of the award.

The paper will comprise two sections, Section A (restricted response) and section B (extended response) covering all of the mandatory technology Units.

Section A of the paper will require candidates to answer all questions and will be worth 40% of the total value of the paper.

Section B will present candidates with a choice of four from seven detailed response questions. The total value of marks for any four chosen questions will be worth 60% of the marks available on the paper.

A cumulative total of at least 50% will be required to be awarded a pass in the Graded Unit.

4.3 Conditions of the award

Candidates will be awarded the HNC Shipbuilding on successful completion of 11 Unit credits plus 1 Graded Unit based on the award structure shown in Section 4.1. More specifically this award structure requires that candidates achieve the following:

- the 1 Unit credit Communication: Practical Skills
- the 1 Unit credit Mathematics for Engineering 1: Mechanical and Manufacturing
- 7 Unit credits from the mandatory Units section
- 2 Unit credits from the optional section
- Shipbuilding: Graded Unit

4.4 Core Skills in the award

4.4.1 Exit profile

A candidate who successfully achieves an HNC Shipbuilding will potentially obtain the following Core Skills exit profile:

♦ Communication	Higher (fully embedded in the Unit Communication: Practical Skills)
♦ Problem Solving	Intermediate 2
♦ ICT	Intermediate 1
♦ Numeracy	Intermediate 2
♦ Working with Others	Intermediate 2

The above exit profile is dependent on the Units selected.

4.4.2 Entry profile

Given the information on Core Skills provided in the previous section the following minimum entry profile is recommended:

♦ Communication	Intermediate 2
♦ Problem Solving	Intermediate 1
♦ ICT	Intermediate 1
♦ Numeracy	Intermediate 2
♦ Working with Others	Intermediate 1

5 Approaches to delivery and assessment

5.1 Content and context

Throughout the design and development of the award the development team placed a high priority on producing an award that allows candidates to develop appropriate technical and vocational skills. It is not possible to quantify these skills in exact detail. However the development team took the view that the best way to prepare candidates to meet the changing requirements of modern industry is to ensure that they have a solid foundation of theory and practice upon which they can build new knowledge, understanding and skills. Thus, the mandatory section of the award has Units in *Naval Architecture Ship Construction, Shipbuilding Principles: Advanced Hull, Shipbuilding Principles: Planning Production* and *Ship Stability within Naval Architecture: Introduction,* and two Ship Systems Units covering Propulsion and Auxiliary Systems respectively. The optional section of the course allows candidates to select the group(s) of Units which best reflect their industrial and career aspirations. This group contains specialist Units in Welding, Fabrication, Shipbuilding, Naval Architecture as well as further levels of Mathematics for those candidates looking at progressing to University.

The options section of the award provides candidates with the opportunity to specialise in technical and/or non-technical subjects. In line with normal good practice centres are encouraged to advise candidates to select those options which will meet their future needs both for career and educational progression.

5.2 Delivery and assessment

5.2.1 Delivery

The new HNC award can be delivered by the following means:

- Full-time
- Part-time day
- Part-time evening
- Block-release
- Flexible learning
- Open Learning

The suggested method of delivery would be classroom lectures followed by laboratory/practical work to reinforce the classroom delivery. Candidates could also be set research tasks to compliment this.

In timetabling the award centre staff should take account of the information contained in the 'Recommended Prior Knowledge and Skills' statements in Unit specifications. Industrial visits are encouraged to provide candidates with 'real life' examples of the application of theory and practice learnt in the classroom.

An exemplar timetable for a day-release course is included in Appendix 1.

5.2.2 Assessment

The assessment strategy of the new design principles encourages a more holistic approach to assessment and has been adopted in the award. The new HN Unit specification places the emphasis on reducing assessment load for candidates and centres by devising assessments that assess the entire content where appropriate and by sampling knowledge and/or skills carried out under closed-book conditions on a random basis to ensure that candidates do not have prior knowledge of the sample.

Unit specifications detail exactly the Evidence Requirements and assessment procedure for each assessment event. Should centres wish to use a different mode of assessment from that recommended they should seek prior verification from SQA.

Exemplar assessment material for all the mandatory Technology Units and some of the optional Technology Units are planned to be available for centre reference in due course.

Centres are recommended to seek opportunities to adopt a holistic approach to the assessment process within individual Units and where practical across a differing number of the mandatory Units. This can be accomplished by seeking out a variety of appropriate case studies and mini projects. The construction of an Outcome coverage matrix can provide a tracking document to ensure that all Outcomes across the target Units are covered by the candidates. Centres are encouraged to seek industrially relevant projects from their partner employers to ensure that the skills and understanding are directly applicable to the workplace.

5.3 Open Learning

The award can be delivered by Open Learning. Advice on the use of Open Learning is given in individual Unit specifications.

Candidates would have to attend the presenting centre or other agreed institution to complete the assessments in order to maintain authenticity.

For further information on normal open learning arrangements please refer to the SQA publication: *Assessment and Quality Assurance of Open and Distance Learning*.

5.4 Credit transfer

As the last Shipbuilding HNC lapsed more than 8 years ago it is not deemed practical to offer any credit transfer between the old and new awards.

However, where an individual has current HN Engineering or HN Nautical Science Units that fall within the scope of this framework then credit will be given.

New Unit Title	New Unit Code	Old Unit Title	Old Unit Code	Credit Transfer Conditions
Engineering Mathematics 1	H7K0 33	Mathematics for Engineering 1:Electronics and Electrical	DG4H 33	To gain credit transfer to the new unit candidates will have to provide additional evidence relating to functions as specified in the Evidence requirements in respect of the first three knowledge/skills in Outcome 1 and relating to vectors as specified in the first three knowledge/skills in outcome 3.
Engineering Mathematics 1	H7K0 33	Mathematics for Engineering 1:Mechanical and Manufacturing	DT5X 33	To gain credit transfer to the new unit candidates will have to provide additional evidence relating to functions as specified in the Evidence requirements in respect of the first three knowledge/skills in Outcome

				1 and relating to 3D vectors and complex numbers as specified in the knowledge/skills in outcome 3.
Engineering Mathematics 2	H7K1 34	Mathematics for Engineering 2	DG4L 34	To gain credit transfer to the new unit candidates will have to provide additional evidence relating to trigonometric and hyperbolic functions as specified in the Evidence requirements in respect of Outcome 1.

5.5 Additional support needs

The award has been designed to ensure that there are no artificial barriers to learning or assessment. Centres should take account of the needs of individual candidates when planning learning experiences, selecting assessment instruments or considering special alternative Outcomes for Units. For further information on these please refer to the SQA publication: *Guidance on Special Assessment Arrangements.*

5.6 General Information for candidates

The new HNC in Shipbuilding has been designed by an expert team of educationalists and industrialists with considerable experience with a view to allowing you to meet the educational requirements to work as a technician or supervisor in the Shipbuilding industry. The new qualification contains up-to-date and relevant subject content and skills and has been designed to satisfy the new SQA Higher National Design Rules.

The development team has designed the new award so that you have opportunities to learn and understand the core principles and technologies that underpin Naval Architecture and Shipbuilding. Learning these will be essential in providing you with a platform for tackling many tasks and allowing you to develop a more in-depth knowledge of the industry. In undertaking this course of study you will gain an understanding of how ships are constructed, what is used to propel them, what stops them from capsizing, the types of sub systems that are found on vessels, what is involved in the fitting out process, how the build of a large vessel is planned as well as a variety of appropriate engineering skills that support the shipbuilding process.

As well as studying Shipbuilding and Naval Architecture subjects, you will also take Communication with an option to do Information and Communication Technology as part of the HNC. Good Communication skills are essential to understanding technical material and to communicating with others whether on an individual basis or as part of a team. You will learn to develop such skills when doing the HNC.

If you study this award it will most likely lead you into technician, supervisory or commissioning posts within the shipbuilding industry.

The development team has ensured that assessments in the award meet national standards. The award has been designed to optimise assessment so that sufficient time is available to you to learn the core principles and technologies and the practical skills that are essential for a good technician or craftsman.

You can expect to undertake assessments at individual Unit level and at qualification level. At Unit level this will consist of some form of written end test or a combination of written and practical tests depending on the optional Units selected. You should be informed at the start of the Unit what form the assessment will take. In addition to Unit tests there will also be a 3-hour examination. This assessment has been designed to allow you to demonstrate your ability to integrate knowledge, understanding and skills learnt in core areas of the award as a whole.

5.7 Progression pathways

Most HNCs form the first part of a corresponding HND. This is not currently the case with this award. At this time there has not been a view expressed by stakeholders as to the need for an HND level award.

As there is not currently a specific HND in Shipbuilding then candidates wishing to progress to the HND level should undertake the HND Engineering Systems which would accept the HNC as a component of this award.

5.8 Relationship to other awards

It is anticipated that candidates will have opportunities to transfer a number of Units between HNC Fabrication, Welding & Inspection, HNC Engineering Systems, HNC/HND in Nautical Science and HNC Mechanical Engineering and vice versa.

6 General information for centres

Centres should provide candidates with a brief summary of the Group Award before they commence their course of study. It should include information on what the award is about, provide information on the knowledge and skills to be developed, what is involved in assessment with particular reference to the Graded Unit and Core Skills and the conditions of the award. this would normally be presented in a course handbook and should also include information on the possible route(s) of progression in education, and the types of employment available for candidates obtaining the award.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**

Internal and external verification

All instruments of assessment used within this/these Group Award(s) should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

Further information on internal and external verification can be found in *SQA's Guide to Assessment and Quality Assurance for Colleges of Further Education* **(www.sqa.org.uk)**.

7 Glossary of terms

SCQF: This stands for the Scottish Credit and Qualification Framework, which is a new way of speaking about qualifications and how they inter-relate. We use SCQF terminology throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at **www.scqf.org.uk**

SCQF credit points: One HN credit is equivalent to 8 SCQF credit points. This applies to all HN Units, irrespective of their level.

SCQF levels: The SCQF covers 12 levels of learning. HN Units will normally be at levels 6–9. Graded Units will be at level 7 and 8.

Subject Unit: Subject Units contain vocational/subject content and are designed to test a specific set of knowledge and skills.

Graded Unit: Graded Units assess candidates' ability to integrate what they have learned while working towards the Units of the Group Award. Their purpose is to add value to the Group Award, making it more than the sum of its parts, and to encourage candidates to retain and adapt their skills and knowledge.

Dedicated Unit to cover Core Skills: This is a non-subject Unit that is written to cover one or more particular Core Skills.

Embedded Core Skills: This is where the development of a Core Skill is incorporated into the Unit and where the Unit assessment also covers the requirements of Core Skill assessment at a particular level.

Signposted Core Skills: This refers to the opportunities to develop a particular Core Skill at a specified level that lie outwith automatic certification.

Qualification Design Team: The QDT works in conjunction with a Qualification Manager/Development Manager to steer the development of the HNC/HND from its inception/revision through to validation. The group is made up of key stakeholders representing the interests of centres, employers, universities and other relevant organisations.

Consortium-devised HNCs and HNDs are those developments or revisions undertaken by a group of centres in partnership with SQA.

Specialist single centre and specialist collaborative devised HNCs and HNDs are those developments or revisions led by a single centre or small group of centres who provide knowledge and skills in a specialist area. Like consortium-devised HNCs and HNDs, these developments or revisions will also be supported by SQA.

8 Appendices

Appendix 1: Exemplar Timetable — Day Release Student Timetable (Year 1)

Appendix 1: Exemplar Timetable — Day Release Student Timetable (Year 2)

Appendix 2: Articulation arrangements

Appendix 1: Exemplar Timetable — Day Release Student Timetable (Year 1)

Class/Group: HNC Shipbuilding (Year 1)

DAY	SEMESTER	09.00-10.00	10.00-11.15	11.15-12.15	12.15-13.00	13.00-14.00	14.00-15.00	15.00-16.30
		1	2	3	LUNCH	5	6	7
TBA	SEMESTER 1	Communication: Practical Skills		Mathematics for Engineering 1: Mechanical and Manufacture			Shipbuilding Principles: Planning, Production and Assembly	
TBA	SEMESTER 2	Ship Stability within Naval Architecture		Computer Aided Draughting for Engineers			Shipbuilding Principles: Advanced Hull and Associated Principles	

Appendix 1: Exemplar Timetable — Day Release Student Timetable (Year 2)

Class/Group: HNC Shipbuilding (Year 2)

DAY	SEMESTER	09.00-10.00	10.00-11.15	11.15-12.15	12.15-13.00	13.00-14.00	14.00-15.00	15.00-16.30
		1	2	3	LUNCH	5	6	7
TBA	SEMESTER 1	Ship Systems Propulsion		Naval Architecture Ship Construction			Fitting Out	
TBA	SEMESTER 2	Ship Systems Auxiliary Systems		Welding Procedures			Graded Unit	

Appendix 2: Articulation arrangements

Articulation consultation has taken place with Napier University who have indicated that if candidates were successful with their HNC Shipbuilding award with just the level 6 mathematics in place candidates would gain entry into year 1 any of their Mechanical or Electrical Degree programmes.

If candidates were successful with their HNC Shipbuilding award and had taken all 3 of the Mathematics Units detailed in the award framework then they would be eligible to enter the second year of the Mechanical/Electrical Degree programmes.

Appendix 3: Core Skill signposting

Unit title	Unit code	Core Skills type	Fully achieved	Signposted
Communication Practical Skills	D77G 34	Communication/Higher	X	
Shipbuilding Principles: Planning, Production and Assembly	DR2F 34	Communication and Problem Solving		X
Shipbuilding Principles: Advanced Hull and Associated Technologies	DR2E 34	Communication and Problem Solving		X
Naval Architecture: Ship Construction	F0LF 34	Communication — Writing and Reading		X
Ship Stability within Naval Architecture: An Introduction	F503 34	Using Numbers at SCQF level 6 Communication: Writing and Reading SCQF level 4	X	X
Ship Systems: Propulsion	F43G 34	Communication: Writing and Reading SCQF level 5		X
Ship Systems — Auxiliary Systems	F43F 34	Communication: Writing and Reading SCQF level 5		X
Shipbuilding: Fitting Out	F43E 34	Communication: Writing and Reading SCQF level 5		X
Fabrication Forming Processes	DR25 34	Communication, Numeracy and Problem Solving		X
Welding Procedures: Specification, Qualification and Testing	DR24 34	Communication, Numeracy and Problem Solving		X
Welding Principles and Applications 1	DR2G 34	Communication and Problem Solving		X
Welding Principles and Applications 2	DR1Y 34	Numeracy and Problem Solving		X
Fabrication: Preparation, Joining and Assembly	DR2C 34	Communication, Numeracy and Problem Solving		X
Fabrication and Welding Materials	DR2H 34	Communication, Numeracy and Problem Solving		X
Inspection Systems	DR26 34	Communication, Numeracy and Problem Solving		X
Materials Selection	DT46 34	Written Communication — Higher, Critical Thinking — Higher,		X
Engineering Project	DR20 34	Communication, Problem Solving and Working with Others		X
Statics and Strength	DR1T 34	Using Number — Higher and Critical Thinking — Higher		X
Engineering Principles	DR3L 34	Critical Thinking — Higher and Written Communication — Intermediate 2		X
Pneumatics and Hydraulics	DT9X 34	Critical Thinking — Higher and Written Communication — Intermediate 2		X
Engineering: Practical Skills	F1BX 33	Using Graphical Information — level 6, Critical Thinking — level 6		X
		Review and Evaluation — level 6 and Working with Others — level 5		
Quality Management: An Introduction	DT8Y 34	Written Communication — Higher, Using Graphical Information — Higher		X
		Using Information Technology — Higher, Critical Thinking — Higher		X
Design Analysis: Fabrication and Welding	DR22 34	Communication, Numeracy and Problem Solving		X
Information Technology: Applications Software 1	D75X 34	Using Information Technology — Higher	X	
Computer Aided Draughting for Engineers	DR1X 34	Using Information Technology — Higher		X
Computer Aided Engineering (CAE) and Prototyping	DR1R 35	Using Information Technology — Higher, Critical Thinking — Higher		X
		Review and Evaluation — Higher		X
Mathematics for Engineering 1: Mechanical and Manufacturing	DT5X 33	Using Number at level 6	X	
Mathematics for Engineering 2	DG4L 34	Using Number at level 6	X	
Mathematics for Engineering 3	DG4P 35	Using Number at level 6	X	