



Group Award Specification for:

HNC in Chemical Engineering at SCQF level 7

Group Award Code: GL69 15

Validation date: June 2016

Date of original publication: June 2016

Version: 01

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1 Introduction

This document was previously known as the Arrangements document. The purpose of this document is to:

- ◆ assist centres to implement, deliver and manage the qualification
- ◆ provide a guide for new staff involved in offering the qualification
- ◆ inform course managers, teaching staff, assessors, learners, employers and HEIs of the aims and purpose of the qualification
- ◆ provide details of the range of learners the qualification is suitable for and progression opportunities

This is the Group Award Specification for the HNC Chemical Engineering.

The HNC Chemical Engineering Group Award allows learners to gain skills and knowledge in Chemical Engineering and the essential skills necessary for progression to the workplace in a process operator/technician role or further academic study.

Qualifications Design Teams (QDT) were created to support the development process in consultation with employers and higher education colleagues and further education partners. In designing the Group Award, the QDT has been fully aware of the need for the Group Award to contain relevant technical and transferable skills to enable immediate entry to employment while at the same time allowing articulation to further study. The QDT believes that an appropriate balance between academic and vocational knowledge and skills has been achieved throughout the mix of Unit content and potential teaching approaches.

The Group Award is designed for both full and part-time learners and the target audience is those who are working towards a Modern Apprenticeship in Chemical Process Engineering or have worked in a relevant industry for a period of time and are looking to gain a qualification in underpinning academic knowledge, as well as those who wish to progress to further study.

The theoretical content may be delivered by open and distance learning methods, provided that adequate preparations are made. Additional planning and resources will be needed for learner support and assessment. Quality assurance procedures must also be sufficient and robust to support open and distance learning.

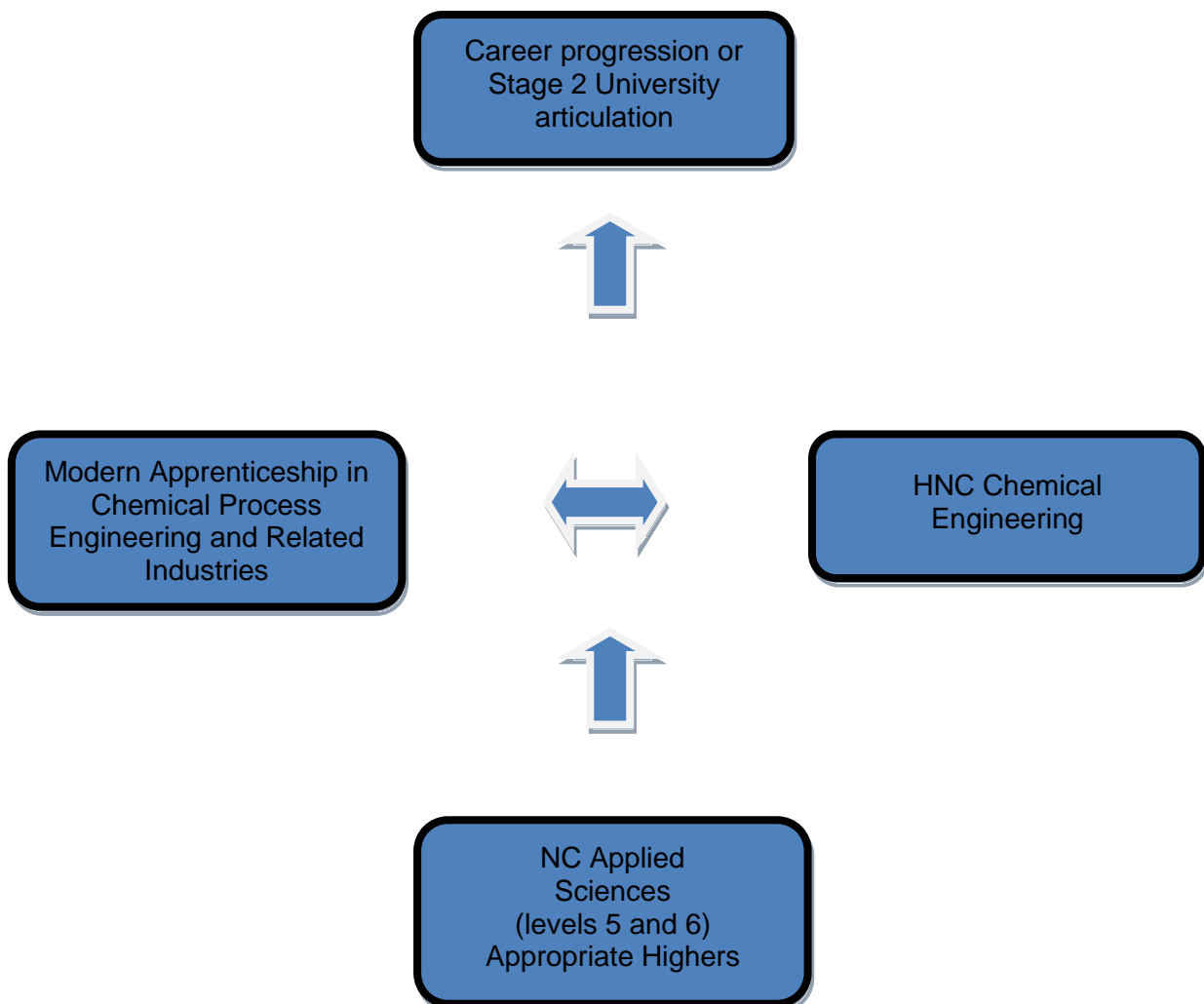
The Group Award is designed as a discrete, specialised qualification to equip learners with the knowledge, skills and understanding required for employment or progression to further academic study, and may be seen to be supporting the national strategies and drivers as outlined below.

A range of industrial sectors require skilled process technicians and chemical engineers. These industries are not only chemical sector companies, but also life sciences companies, food and drink companies and industrial biotechnology companies. This Group Award is designed to need the needs of these industries.

The Wood Commission Report emphasised that ‘moving beyond school, we must ensure that young people at college pursue studies with an expectation that they will lead successfully to employment in the prevailing labour market. The newly formed regional colleges, through more focused and ambitious outcome agreements, and working closely with industry, should ensure that a college education provides skills and qualifications relevant to the market requirements and in particular the new challenges of the modern technology orientated economy.’ And that ‘As they move into the senior phase, young people of all abilities should have the opportunity to follow industry relevant vocational pathways alongside academic studies.’

The current review has allowed the Group Award to take into account changes that have taken place with the introduction of Curriculum for Excellence, inclusion of updated technical data, revised assessment strategies, flexibility to meet the needs of industry and recognition of the needs of learners for progression to higher education.

The interrelationship of the Group Award with other qualifications is illustrated by the following diagram:



2 Qualification structure

Mandatory Units (8 credits)

Code		Unit title	SCQF level	SCQF credit points	SQA credit
HE3G	34	Industrial Chemicals: Processes and Products	7	8	1
H97N	34	Chemical Engineering: Principles	7	8	1
H97R	35	Process Operations: Distillation	8	8	1
HE3J	35	Process Operations: Heat Exchange, Drying and Evaporation	8	8	1
HE3E	34	Fluid Mechanics: Theory and Laboratory Skills	7	8	1
H97T	34	Heat Transfer Theory and Practical Skills	7	8	1
HE3F	34	Process Safety Engineering	7	8	1
HF0M	34	Chemical Engineering: Graded Unit 1	7	8	1

Mandatory Units (1–2 credits)

Code		Unit title	SCQF level	SCQF credit points	SQA credit
H7K0	33	Engineering Mathematics 1	6	8	1
H7K1	34	Engineering Mathematics 2	7	8	1

Optional Section A (1–3 credits)

Code		Unit title	SCQF level	SCQF credit points	SQA credit
H92X	34	Fundamental Chemistry: Theory and Laboratory Skills	7	16	2
H7K2	34	Engineering Mathematics 3	7	8	1
HE3H	34	Process Water and Steam Services	7	8	1
DX4K	34	Process Control	7	8	1
H97M	34	Fermentation Engineering	7	8	1
H97L	34	Chemical Engineering: Applied Physical Chemistry	7	8	1
D75X	34	Information Technology: Applications Software 1	7	8	1
H97P	34	Industrial Biotechnology: Processing	7	8	1

Optional Section B — Broadening Units (0–1 credit)

Code		Unit title	SCQF level	SCQF credit points	SQA credit
H8T2	33	Workplace Communication in English	6	8	1
DE3R	34	Personal Development Planning	7	8	1

This Group Award is made up of 12 SQA Unit credits, and comprises of 96 SCQF credit points. A minimum of 72 SCQF credit points are required to be achieved from the mandatory sections. Learners then select optional Units from the remaining sections to complete the total of 96 SCQF credit points. Depending on the SCQF points achieved from the mandatory sections, a further 16–24 SCQF credit points are required from the optional Sections A and B.

The *Chemical Engineering: Graded Unit 1* is an investigative report. The purpose of the *Chemical Engineering: Graded Unit 1* is to assess the learner's ability to integrate and apply the knowledge and skills gained in the individual Units to demonstrate that they have achieved the specific aims of the Group Award and to grade learner achievement.

3 Aims of the qualification

The overall aim of the HNC Chemical Engineering Group Award is to provide a progressive, integrated and coherent education which will be responsive to the needs of learners, employers and higher institutions.

3.1 General aims of the qualification

The general aims of the HNC Chemical Engineering Group Award are to develop:

- ◆ knowledge of study, research and analysis
- ◆ ability to define and solve problems
- ◆ transferable skills
- ◆ ability to be flexible and work co-operatively with others
- ◆ responsibility for own learning
- ◆ planning, organisation and review/evaluation skills
- ◆ oral and written scientific communication skills
- ◆ numerical and ICT skills
- ◆ employability skills

3.2 Specific aims of the qualification

The aims of the HNC Chemical Engineering Group Award specify the knowledge and skills required to be deemed competent in this subject area/occupational area.

The specific aims of the HNC Chemical Engineering Group Award are:

- ◆ Prepare learners for an appropriate level of employment, in areas of the chemical sector such as chemical production, oil and gas, pharmaceutical, food and agriculture production, energy.

- ◆ Develop a range of vocational skills relating to the use, support and development of systems appropriate to employment at technician or professional level.
- ◆ Provide learners with a range of skills to support learning in relevant SVQ 3 level programmes.
- ◆ Provide learners with an element of vocational specialisation in a variety of areas such as chemical production, oil and gas, pharmaceutical, food and agriculture production, energy.
- ◆ Prepare learners for progression to further studies in chemical engineering and related disciplines.
- ◆ Provide a flexible route to the Group Award, allowing access to those in employment through part-time study and full-time provision.
- ◆ Provide an opportunity for learners to discover which areas of chemical engineering and chemical process most interest them by providing them with an experience of each of the main branches of the subject areas which is diverse and varied.
- ◆ Provide a wider range of practical industrial skills to enhance job prospects through the practical content of the course.
- ◆ Provide learners with a sound academic basis for the continuing development of practical and conceptual skills.

3.3 Graded Unit(s)

The purpose of the Graded Units is to assess the learner's ability to integrate and apply the knowledge and skills gained in individual Units to demonstrate that they have achieved the specific aims of the Group Award.

Learners will undertake the 1 credit *Chemical Engineering: Graded Unit 1* at SCQF level 7 for the Group Award.

The *Chemical Engineering Graded Unit 1* will take the form of an investigation report. It will cover a range of skills achieved through studying the mandatory Units within the Group Award. It allows learners to use research skills, set timescales, identify main issues, methods and sources of research and develop scientific reporting skills.

Learners will be required to produce reports covering planning, development and evaluation of the investigation.

The *Chemical Engineering: Graded Unit 1* is designed to provide evidence that the learner has achieved the following aims of the HNC Chemical Engineering Group Award:

- ◆ develop learners' knowledge and skills such as planning, developing and evaluating
- ◆ develop employment skills and enhancing learners' employment prospects
- ◆ enable progression within the Scottish Credit and Qualifications Framework (SCQF)
- ◆ develop transferable skills including Core Skills
- ◆ prepare for employment in a chemical engineering or related post at technician or professional level
- ◆ develop a range of vocational skills appropriate to employment at technician or professional level in the chemical science sector

In addition, the learner will develop a variety of supplementary skills which enhance life skills and the educational experience. These skills are associated with enterprise, employability, sustainability, and citizenship.

4 Recommended entry to the qualification

Entry to this qualification is at the discretion of the centre. The following information on prior knowledge, skills, experience or qualifications that provide suitable preparation for this qualification has been provided by the Qualification Design Team (QDT) as guidance only.

Learners would benefit from having attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

The following qualifications are given as guidelines only:

- ◆ A minimum of two Highers from Chemistry, Mathematics or Physics at Grade C or above, with appropriate supporting passes at National 5 level (or equivalent SCQF level 5) in appropriate science subjects and Mathematics.
- ◆ NC Applied Sciences (which includes Physics Units).
- ◆ Qualifications in appropriate science, chemical engineering and mathematics programmes, such as Access programmes. Learners should have gained some Units at higher level in appropriate science, chemical engineering and mathematics programmes.
- ◆ Suitable work experience gained in a chemical engineering/chemical process setting.

It is intended that admission to the HNC Chemical Engineering Group Award should be as broadly based as possible, but that this should be consistent with the selection of learners who have the appropriate knowledge and skills to successfully achieve the HNC Chemical Engineering Group Award.

4.1 Core Skills entry profile

The Core Skills entry profile provides a summary of the associated assessment activities that exemplify why a particular level has been recommended for this qualification. The information below should be used to identify if additional learning support needs to be put in place for learners whose Core Skills profile is below the recommended entry level or whether learners should be encouraged to do an alternative level or learning programme.

It should be noted that although there is no mandatory entry and exit levels the following is recommended:

Core Skill	Recommended SCQF entry profile	Associated assessment activities
Communication	SCQF level 5	Research, analysis, report, oral presentation.
Numeracy	SCQF level 5	Numerical and graphical presentation, numerical and algebraic calculations.
Information and Communication Technology (ICT)	SCQF level 5	Accessing information for research purposes, assimilation and analysis of research information. Creation of graphical and narrative material for report and presentation purposes.
Problem Solving	SCQF level 5	Critical thinking, planning and evaluation.
Working with Others	SCQF level 4	Co-operative working as part of a team for practical activities.

5 Additional benefits of the qualification in meeting employer needs

This qualification was designed to meet a specific purpose and what follows are details on how that purpose has been met through mapping of the Units to the aims of the qualification. Through meeting the aims, additional value has been achieved by linking the Unit standards with those defined in National Occupational Standards and/or trade/professional body requirements. In addition, significant opportunities exist for learners to develop the more generic skills, known as Core Skills, through doing this qualification.

5.1 Mapping of qualification aims to Units

Code	Unit Title	General Aims								
		1	2	3	4	5	6	7	8	9
HE3G 34	Industrial Chemicals: Processes and Products	X	X	X		X			X	X
H97N 34	Chemical Engineering: Principles	X	X	X		X			X	X
H97R 35	Process Operations: Distillation	X	X	X	X	X	X	X	X	X
HE3J 35	Process Operations: Heat Exchange, Drying and Evaporation	X	X	X		X			X	X
HE3E 34	Fluid Mechanics: Theory and Laboratory Skills	X	X	X	X	X	X	X	X	X
H97T 34	Heat Transfer Theory and Practical Skills	X	X	X	X	X	X	X	X	X
HE3F 34	Process Safety Engineering	X	X	X		X			X	X
HF0M 34	Chemical Engineering: Graded Unit 1	X	X	X		X	X	X	X	X
H7K0 33	Engineering Mathematics 1	X	X	X		X	X		X	X
H7K1 34	Engineering Mathematics 2	X	X	X		X	X		X	X
H92X 34	Fundamental Chemistry: Theory and Laboratory Skills	X	X	X	X	X	X	X	X	X
H7K2 34	Engineering Mathematics 3	X	X	X		X	X		X	X
HE3H 34	Process Water and Steam Services	X	X	X		X	X		X	X
DX4K 34	Process Control	X	X	X		X	X		X	X

5.1 Mapping of qualification aims to Units

Code	Unit Title	General Aims								
		1	2	3	4	5	6	7	8	9
H97M 34	Fermentation Engineering	X	X	X		X	X		X	X
H97L 34	Chemical Engineering: Applied Physical Chemistry	X	X	X		X			X	X
D75X 34	Information Technology: Applications Software 1		X	X		X	X		X	X
H97P 34	Industrial Biotechnology: Processing	X	X	X		X			X	X
DE3R 34	Personal Development Planning		X	X		X	X		X	X
H8T2 33	Workplace Communication in English	X		X	X	X	X	X	X	X

5.2 Mapping of National Occupational Standards (NOS)

The HNC Chemical Engineering Group Award has been mapped against the level 3 SVQ Process Industries Operations.

National Occupational Standard	Industrial Chemicals: Processes and Products (HE3G 34)	Chemical Engineering: Principles (H97N 34)	Process Operations: Distillation (H97R 35)	Process Operations: Heat Exchange, Drying and Evaporation (HE3J 35))	Fluid Mechanics: Theory and Laboratory Skills (HE3E 34)	Heat Transfer Theory and Practical Skills (H97T 34)	Process Safety Engineering (HE3F 34)	Engineering Mathematics 1 (H7K0 33)	Engineering Mathematics 2 (H7K1 34)
Handover in Processing Industries Operations									
Working Effectively in a Team in Processing Industries Operations			X		X	X			
Emergency Procedure in Processing Industries Operations							X		
Control Room Operations in Processing Industries Operations			X						
Prepare for Complex Processing Operation in Processing Industries Operations									
Control, Maintain and Restore Complex Processing Operation in Processing Industries Operations			X			X			
Complete a Complex Processing Operation in Processing Industries Operations			X		X	X			
Contribute to the Maintenance of Product Quality in Processing Industries Operations			X						
Clean and Prepare Complex Items of Plant and Equipment for Production in Processing Industries Operations									

National Occupational Standard	Industrial Chemicals: Processes and Products (HE3G 34)	Chemical Engineering: Principles (H97N 34)	Process Operations: Distillation (H97R 35)	Process Operations: Heat Exchange, Drying and Evaporation (HE3J 35))	Fluid Mechanics: Theory and Laboratory Skills (HE3E 34)	Heat Transfer Theory and Practical Skills (H97T 34)	Process Safety Engineering (HE3F 34)	Engineering Mathematics 1 (H7K0 33)	Engineering Mathematics 2 (H7K1 34)
Ensure Your Own Actions aim to Protect the Environment in Processing Industries Operations			X			X			
Control Emergencies and Critical Situations in Processing Industries Operations									
Allocate Personnel to Maintain Processing in Processing Industries Operations									
Plan to Maintain Product Integrity in Processing Industries Operations									
Enable Individual Learning Through Coaching in Processing Industries Operations									
Solving Process Problems in Processing Industries Operations		X	X	X	X	X			
Conduct an Assessment of Risks in the Workplace in Processing Industries Operations									
Identify Improvement to Energy Efficiency in Processing Industries Operations		X	X			X			
Enable Learning Through Demonstrations and Instruction in Processing Industries Operations									

5.3 Mapping of Core Skills development opportunities across the qualification

Unit code	Unit title	Communication		Numeracy		ICT		Problem Solving			Working with Others	
		Written	Oral	Using Number	Using Graphical Information	Accessing Information	Providing/Creating Information	Critical Thinking	Planning and Organising	Reviewing and Evaluating	Working Co-operatively with Others	Reviewing Co-operative Contribution
HE3G 34	Industrial Chemicals: Processes and Products	S	S			S	S	S	S			
H97N 34	Chemical Engineering: Principles			E	O			S	O	O		
H97R 35	Process Operations: Distillation	S		E	S	O	O	S	O	O	S	O
HE3J 35	Process Operations: Heat Exchange, Drying and Evaporation			S	S			S	O	O		
HE3E 34	Fluid Mechanics: Theory and Laboratory Skills			E	S			S	O	O		
H97T 34	Heat Transfer Theory and Practical Skills	S		E	S	O	O	E	O	O	S	O
HE3F 34	Process Safety Engineering	S	S			S	S	S	S			
HF0M 34	Chemical Engineering: Graded Unit 1	S	S	S	S	S	S	E	E	E		
H7K0 33	Engineering Mathematics 1			E	O			O	O	O		
H7K1 34	Engineering Mathematics 2			E	O			O	O	O		
H92X 34	Fundamental Chemistry: Theory and Laboratory Skills	O		E	O	O	S	O	O	S	O	O

Unit code	Unit title	Communication		Numeracy		ICT		Problem Solving			Working with Others	
		Written	Oral	Using Number	Using Graphical Information	Accessing Information	Providing/Creating Information	Critical Thinking	Planning and Organising	Reviewing and Evaluating	Working Co-operatively with Others	Reviewing Co-operative Contribution
H7K2 34	Engineering Mathematics 3			E	O			O	O	O		
HE3H 34	Process Water and Steam Services	S		E	S	O	O	S	O	S	O	O
DX4K 34	Process Control	S						S	S			
H97M 34	Fermentation Engineering			E	O			S	O	O		
H97L 34	Chemical Engineering: Applied Physical Chemistry			E	S			S	O	O		
D75X 34	Information Technology: Applications Software 1					E	E	O	O	O		
H97P 34	Industrial Biotechnology: Processing	S	S	S	S	O	S	S	O	O		
DE3R 34	Personal Development Planning	O	O			O	O	O	O	O		
H8T2 34	Workplace Communication in English	E	E			S	S	S	S	S	S	S

Key:

E = Embedded

S = Signposted

O = Opportunities

5.4 Assessment Strategy for the qualification

In the majority of Units, theory based Outcomes are assessed holistically by means of an end of Unit closed-book assessment under controlled conditions. Practical Outcomes are evidenced by a variety of means; please consult individual Unit specifications for clarification and details of arrangements. The Units in the following table are notable exceptions.

Unit	Assessment
Chemical Engineering: Graded Unit 1	Assessed by the use of a scientific report. The investigation brief should provide the learner with the opportunity to produce evidence that demonstrates she/he has met the aims of the Group Award.
Personal Development Planning	Assessed holistically by means of a personal development portfolio.
Workplace Communication in English	Outcome 1: Summarising and evaluating a written business text which combines factual content and analysis. Outcome 2: Producing a folio of at least three vocationally relevant documents which present and examine information and ideas. Outcome 3: Taking part in sustained spoken communication which has a clear remit involving a complex vocational issue.

6 Guidance on approaches to delivery and assessment

6.1 Sequencing/integration of Units

The structure of the HNC Chemical Engineering Group Award allows a high degree of flexibility in the mode of delivery. The Group Award can be offered on a full-time, part-time, day-release, block release basis, or as an evening mode of study. A distance learning delivery mode is possible provided adequate materials, tutorial support, assessment facilities and laboratory time exist. Centres should note however that assessed practical activities must take place under supervised conditions. Combination of delivery modes is also a possibility. Such combined modes of study may enable learners to complete the Group Award in a shorter time period.

Centres will define which order the Units are undertaken based on learner recruitment patterns, mode of delivery, resource implications, and logical progression dictated by topic and content.

The Group Award lend itself to a wide range of delivery mechanisms including formal teaching, case studies, group work, tutorial, laboratory/practical work, field work and demonstration/coaching opportunities. A number of Units specifically indicate some of these approaches are to be utilised in assessment therefore it is important that learners have experienced them throughout the learning process.

6.1.1 Delivery Schedule

There are many driving forces which determine a full-time delivery programme for any Group Award including accommodation, staff availability, materials and equipment.

The following table indicates a suggested delivery programme of Units over a one year full-time delivery programme operating on a two block delivery system.

A common method of delivery for this Group Award is a part-time programme. It is envisaged a two year part-time programme would cover block 1 in Year 1 and block 2 in Year 2.

HNC Chemical Engineering	
Suggested delivery for a full-time one year programme	
Year 1: Teaching Block 1	Year 1: Teaching Block 2
Engineering Mathematics 1 or 2	Process Operations: Distillation
Heat Transfer Theory and Practical Skills	Process Operations: Heat Exchange, Drying and Evaporation
Fluid Mechanics: Theory and Laboratory Skills	Chemical Engineering: Graded Unit 1
Chemical Engineering: Principles	Process Safety Engineering
Optional Unit	Optional Unit
Industrial Chemicals: Processes and Products	Optional Unit

6.2 Recognition of Prior Learning

SQA recognises that learners gain knowledge and skills acquired through formal, non-formal and informal learning contexts.

In some instances, a full Group Award may be achieved through the recognition of prior learning. However, it is unlikely that a learner would have the appropriate prior learning and experience to meet all the requirements of a full Group Award.

The recognition of prior learning may **not** be used as a method of assessing in the following types of Units and assessments:

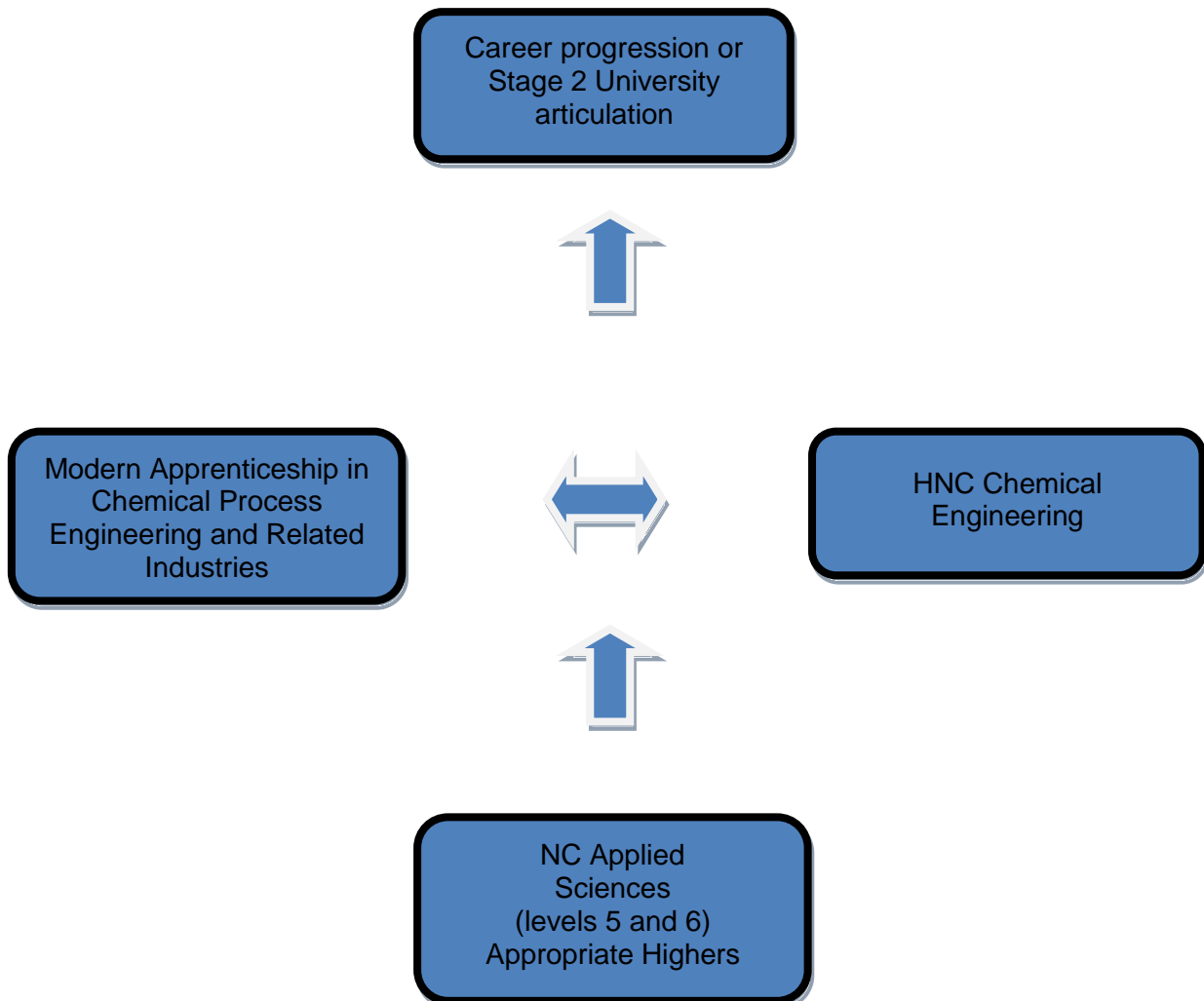
- ◆ HN Graded Units
- ◆ Course and/or external assessments
- ◆ Other integrative assessment Units (which may or not be graded)
- ◆ Certain types of assessment instruments where the standard may be compromised by not using the same assessment method outlined in the Unit
- ◆ Where there is an existing requirement for a licence to practice
- ◆ Where there are specific health and safety requirements
- ◆ Where there are regulatory, professional or other statutory requirements
- ◆ Where otherwise specified in an Assessment Strategy

More information and guidance on the *Recognition of Prior Learning* (RPL) may be found on our website www.sqa.org.uk.

The following sub-sections outline how existing SQA Unit(s) may contribute to this Group Award. Additionally, they also outline how this Group Award may be recognised for professional and articulation purposes.

6.2.1 Articulation and/or progression

The interrelationship of the Group Award with other qualifications is illustrated by the following diagram:



6.2.2 Transitional Arrangements

It is recommended that learners who are in the process of completing the predecessor Group Award finish this rather than switching to the new Group Award. However, there may be occasions when it is not possible for learners to complete the existing Group Award, eg where they were unable to complete their studies due to ill health or difficulties with funding or employment and where the centre has progressed to offer the new Group Award and only one or two Units need completed. In these cases it is recommended that the following credit transfer arrangements be considered.

6.2.3 Credit transfer

New Unit Code	New Unit Title	Old Unit Code	Old Unit Title	Direct Credit Transfer	Elements of Credit Transfer
HE3G 34	Industrial Chemicals: Processes and Products	F3XD 34	Industrial Chemicals: Processes and Products	Yes	
H97N 34	Chemical Engineering: Principles	F3X8 34	Chemical Engineering Principles	Yes	
H97R 35	Process Operations: Distillation	F3XF 35	Process Operations: Distillation	Yes	
HE3J 35	Process Operations: Heat Exchange, Drying and Evaporation	F3XG 35	Process Operations: Heat Exchange, Drying and Evaporation	Yes	
HE3E 34	Fluid Mechanics: Theory and Laboratory Skills	F3XB 34	Fluid Mechanics: Theory and Practice	Yes	
H97T 34	Heat Transfer Theory and Practical Skills	F3XC 34	Heat Transfer: Theory and Practice	Yes	
HE3F 34	Process Safety Engineering	F43J 34	Process Safety Engineering	Yes	
HF0M 34	Chemical Engineering: Graded Unit 1	F4CG 34	Chemical Engineering: Graded Unit 1	Yes	
H7K0 33	Engineering Mathematics 1	DN8D 33	Mathematics for Science 1	No	
H7K1 34	Engineering Mathematics 2	DV9V 34	Mathematics for Science 2	No	

New Unit Code	New Unit Title	Old Unit Code	Old Unit Title	Direct Credit Transfer	Elements of Credit Transfer
H92X 34	Fundamental Chemistry: Theory and Laboratory Skills	DH2K 34	Fundamental Chemistry: Theory and Practice	Yes	
H7K2 34	Engineering Mathematics 3	N/A		N/A	
HE3H 34	Process Water and Steam Services	F3XH 34	Process Water and Steam Services	Yes	
DX4K 34	Process Control	N/A		N/A	
H97M 34	Fermentation Engineering	F3XA 34	Fermentation Engineering	Yes	
H97L 34	Chemical Engineering: Applied Physical Chemistry	F3X9 34	Chemical Engineering: Applied Physical Chemistry	Yes	
D75X 34	Information Technology: Applications Software 1	N/A		N/A	
H97P 34	Industrial Biotechnology: Processing	N/A		N/A	
DE3R 34	Personal Development Planning	N/A		N/A	
H8T2 33	Workplace Communication in English	DE1K 33	Workplace Communication in English	Yes	

6.3 Opportunities for e-assessment

E-assessment may be appropriate for some assessments in the Units comprising this award. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

6.4 Support materials

A list of existing ASPs is available to view on SQA's website.

6.5 Resource requirements

Delivering centres will require appropriate science and chemical engineering teaching laboratories and technical support. Centres will require appropriate laboratory resources to support the delivery of the practical elements of this award.

Centres will require to ensure that specific requirements in terms of documents, texts, and IT resources to support the learning processes within Units are met.

All staff delivering this award will require to hold a qualification appropriate to the Unit delivered.

7 General information for centres

Equality and inclusion

The Unit specifications making up this Group Award have been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners will 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.

Internal and external verification

All instruments of assessment used within this qualification 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* www.sqa.org.uk/GuideToAssessment.

8 Glossary of terms

Embedded Core Skills: is where the assessment evidence for the Unit also includes full evidence for complete Core Skill or Core Skill components. A learner successfully completing the Unit will be automatically certificated for the Core Skill. (This depends on the Unit having been successfully audited and validated for Core Skills certification.)

Finish date: The end of a Group Award's lapsing period is known as the finish date. After the finish date, the Group Award will no longer be live and the following applies:

- ◆ learners may not be entered for the Group Award
- ◆ the Group Award will continue to exist only as an archive record on the Awards Processing System (APS)

Graded Unit: Graded Units assess learners' 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 learners to retain and adapt their skills and knowledge.

Lapsing date: When a Group Award is entered into its lapsing period, the following will apply:

- ◆ the Group Award will be deleted from the relevant catalogue
- ◆ the Group Award specification will remain until the qualification reaches its finish date at which point it will be removed from SQA's website and archived
- ◆ no new centres may be approved to offer the Group Award
- ◆ centres should only enter learners whom they expect to complete the Group Award during the defined lapsing period

SQA credit value: The credit value allocated to a Unit gives an indication of the contribution the Unit makes to an SQA Group Award. An SQA credit value of 1 given to an SQA Unit represents approximately 40 hours of programmed learning, teaching and assessment.

SCQF: The Scottish Credit and Qualification Framework (SCQF) provides the national common framework for describing all relevant programmes of learning and qualifications in Scotland. SCQF terminology is used 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: SCQF credit points provide a means of describing and comparing the amount of learning that is required to complete a qualification at a given level of the Framework. One National Unit credit is equivalent to 6 SCQF credit points. One National Unit credit at Advanced Higher and one Higher National Unit credit (irrespective of level) is equivalent to 8 SCQF credit points.

SCQF levels: The level a qualification is assigned within the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. HNCs and HNDs are available at SCQF levels 7 and 8 respectively. Higher National Units will normally be at levels 6–9 and Graded Units will be at level 7 and 8. National Qualification Group Awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7.

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

Signposted Core Skills: refers to opportunities to develop Core Skills arise in learning and teaching but are not automatically certificated.

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 learners for the Unit which has been revised where they are expected to complete the Unit before its finish date.

Version Number	Description	Date

Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of this qualification.

9 General information for learners

This section will help you decide whether this is the qualification for you by explaining what the qualification is about, what you should know or be able to do before you start, what you will need to do during the qualification and opportunities for further learning and employment.

The HNC in Chemical Engineering is a vocational qualification providing the knowledge and skills required for progression into further study and employment in the chemical sector.

The aims of the HNC Chemical Engineering Group Award are designed to:

- ◆ prepare you for an appropriate level of employment, in areas of the chemical sector such as chemical production, oil and gas, pharmaceutical, food and agriculture production, energy.
- ◆ develop a range of vocational skills relating to the use, support and development of systems appropriate to employment at technician or professional level.
- ◆ provide you with a range of skills to support learning in relevant SVQ 3 level programmes.
- ◆ provide you with an element of vocational specialisation in a variety of areas such as chemical production, oil and gas, pharmaceutical, food and agriculture production, energy.
- ◆ prepare you for progression to further studies in chemical engineering and related disciplines.
- ◆ provide a flexible route to the Group Award, allowing access to those in employment through part-time study and full-time provision.
- ◆ provide you with an opportunity to discover which areas of chemical engineering and chemical process are of most interest to you by allowing you experience of each of the main branches of the subject area which is diverse and varied.
- ◆ develop study and research skills.
- ◆ develop Core Skills such as working with others in a team environment and communication.

9.1 Course content

In order to achieve the HNC in Chemical Engineering, you must achieve 12 credits as follows:

Section	Credits required	Notes
Mandatory Units	8 credits must be achieved	
Mandatory Units	1 credit must be achieved	A further 1 credit could be achieved from this section
Optional Section A	1 credit must be achieved	A further 2 credits could be achieved from this section
Optional Section B	0–1 credits could be achieved, depending on the choice of Units in the mandatory sections	

It is recommended that all learners be given a copy of the Group Award structure from Section 2 with clarification and explanation as appropriate. You should liaise with your lecturer to ensure that you complete the necessary Units to achieve the Group Award itself but also that progression routes remain open to you.

Assessment methods will be varied throughout the course and will include closed-book assessments, projects, reports and practical assignments. There may be presentations and case studies for some assessments. To pass a practical Outcome you will be expected to perform a range of laboratory experiments to a required standard, and to produce a report/pro forma on the experiment.

The HNC includes one Graded Unit. This is a project which you will select the topic for, plan, develop and then evaluate the work you have carried out. The topic selected will be related to your studies. This may be carried out in your place of study or if you are employed in a relevant job you may carry out a work-based project. The topic again will be related to your studies.

The purpose of the Graded Unit is to assess your ability to integrate and apply the knowledge and skills that you will have gained during your period of study. On successful completion of the Graded Unit you will be awarded a Grade of A, B or C. This grading applies only to the relevant Graded Unit and not the overall Group Award.

The HNC will develop Core Skills in *Numeracy, ICT, Working with Others* and *Problem Solving*. Some Units will give automatic certification for Core Skills, while others will give you the opportunity to develop these skills.

Completion of the HNC will give a qualification that has been designed for the Chemical Engineering industry and related sectors and will give you the skills and knowledge suitable for employment in the sector.

Progression opportunities to and from the HNC Chemical Engineering Group Award are illustrated in the following diagram:

