SCOTTISH QUALIFICATIONS AUTHORITY

# ARRANGEMENTS DOCUMENT

## G7GL 15 - HNC COMPUTING

Version 9.0 – May 2013

# 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.

| Version number | Description | Date |
|---|---|---|
| 09 | *Software Development: Developing Small Scale Standalone Applications* (H17W 34) has been added as a local optional Unit to framework. | 21/05/13 |
| 08 | **Changes to code:** Computing: Graded Unit 1 - DH36 34 reinstated in framework. Revised Unit H1J8 34 is not a replacement in this Award. | 02/05/13 |
| 07 | **Changes to code:** *Computing: Graded Unit 1* from DH36 34 *(lapse date 31/07/2013, finish date 31/07/2015)* to H1J8 34. | 29/01/13 |
| | *No History of Changes table when previous version changes were made.* | |
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# ARRANGEMENTS DOCUMENT

G7GL 15 - HNC COMPUTING

## CONTENTS

# RATIONALE

## FOR THE DEVELOPMENT OF THE AWARD AND THE PROCESSES OF CONSULTATION AND MARKET RESEARCH CARRIED OUT

### BACKGROUND TO THE DEVELOPMENT

This Arrangements document is derived from the validation proposal document for the revised Higher National Certificate in Computing which was submitted for validation in May 2004. The HNC Computing award has been offered in unitised format since 1989. The last revisions were in 1995 and 2001.

The 1995 suite of Computing awards was updated and re-designed in 2001 in accordance with SQA's proposed Design Rules which were 'piloted' by Computing, Social Sciences and Communications.

The original review of the 2001 pilot awards, which had already begun by October 2002, had been envisaged as a process of small-scale adjustment (the famous 'tweak') which would address such issues as the credit value of a small number of units, the tendency towards over-assessment and the need to flesh out or adapt some of the Project Integrated Assessments. The course content was expected to be re-organised somewhat, certainly, but it would remain virtually unchanged. Similarly, any changes to the structure of the awards were expected be of a minor nature and to be restricted to possible changes in the credit value of the optional units. In the light of the relatively small period of time which had elapsed since the original pilots had been devised (2001) and the review begun (2002), no major market research or wide-ranging consultation exercises would be necessary and all the revised pilot awards were expected to be operational by August 2004 at the latest.

The situation changed, however, with SQA's adoption of the new Design Principles in March 2003. This made it necessary for the QDT to re-think the scale of the pilot review at relatively short notice, part-way through the revision process. The reduction in the size of the HNC from 15 credits (as required by the pilot rules) to the 12 required by the new principles was the most obvious change; the 15-credit HNC had proved difficult for centres to deliver to candidates who were studying part-time. Centres were also apprehensive about the potential unattractiveness to candidates of a demanding 15-credit HNC in Computing which might now be continuing to compete with 12 credit HNC awards in other subject areas.

An Implementation Group had been set up in November 2001 in order to monitor and evaluate the new pilot awards, provide feedback to SQA and advise centres on best practice and issues arising from the implementation of the awards. This group was replaced in March 2003 by the HN Computing Review Advisory Group (HNCRAG), whose remit was to advise and support SQA's Qualification Design Team (QDT) during the now augmented revision process.

Since March 2003 the QDT has worked in consultation with the HNCRAG, gathering feedback about the pilot awards from practitioners, delivering centres and candidates in order to identify modifications and/or improvements and to reflect the changes in the award structure required by the SQA Design Principles (see *Appendix 1 – SQA HN Design Principles*). The revised HNC

qualification remains a redevelopment of an existing award, rather than the introduction of a completely new award.

This revised HNC Computing award aims to provide candidates with the knowledge and skills that will assist the UK economy in meeting the fundamental skills-gap in the Computing sector by giving candidates the opportunity to focus on and specialise in the rapidly expanding and changing field of Computing. The HNC Computing award has proved to be extremely popular and the number of candidates entered for these awards has continued to rise. Indeed, of all the HNC awards, the HNC Computing has attracted more candidates than any other HNC award offered by SQA.

Many successful candidates have progressed to HNDs and Higher Education and many have taken advantage of the various direct entrant routes to degree programmes which are being offered by an increasing number of Universities. Others have chosen to move directly into various types of employment. The demand from employers for candidates capable of working effectively in a computing environment continues to grow, as does their demand for technical skills and expertise. The revised HNC Computing qualification, like its predecessors, aims to provide the necessary skills and depth of knowledge to ensure that candidates remain attractive to (and attracted by!) these employment markets.

Since 1995, the field of Computing and Information Technology has seen massive changes, both in the technology and in the skills required of computing professionals. In particular, the immense importance of networking and the Internet to modern society has been addressed and reflected in this revised award. The increasing importance of e-commerce, multimedia and information systems have also been acknowledged and the revised HNC award now allows centres to create a path of study with a bias towards any of these areas, should they wish to do so.

As part of the market research undertaken in 2001 to inform the revision of the three pilot HN Computing awards, information was gathered about the IT skills gap, the number of IT employment vacancies and the IT skills most in demand by employers. This review looked at a number of reports commissioned by industry bodies and considered aspects of the IT skills gap in Scotland, the UK, Europe, and worldwide.

The revised HNC qualification has been developed by SQA in response to the above changes and has taken account of large amounts of feedback from the Implementation Group, the Review Advisory Group, practitioners and centres delivering the pilot awards. The revised HNC qualification detailed in this document now aims to consolidate the changes required by the new design principles and also to update the qualification where necessary.

## MEMBERS OF THE QUALIFICATION DESIGN TEAM

The SQA Qualification Design Team (QDT) are:

- Bobby Elliott, Qualifications Manager (SQA)
- Mike Jannetta, Consultant & Lecturer (Lauder College)
- Deryck Nutley, Lecturer (Cardonald College)
- John Knowles, Lecturer (North Glasgow College)
- Shirley Sampson, Qualifications Officer (SQA)

This core team was augmented by a number of unit writers and vetters who wrote and checked the unit specifications.

*Note* - In devising this award, a new model of development was used. Units were grouped into subject areas (eg Software Development, Systems Development, Computer Hardware etc) and written co-operatively by small teams of subject-area specialists, although a named writer remained responsible for producing the final vetted draft. The teams worked together on their unit clusters over two to four weekends, producing the vetted unit specifications and exemplars more quickly and, it is hoped, more coherently than was previously possible. Another innovation was the inclusion of an SQA moderator in each team.

## TARGET SECTOR AND LEVEL OF EMPLOYMENT

The HNC Computing course aims to equip students with the foundation skills required to follow a career within the computing field at a technician level. It is also suitable for those who are unsure which area of computing to specialise in and provides a route for them to further their career. It is also aimed at those who wish to study computing at this level before undertaking a career in another field. Students who articulate can then specialise in greater depth and particular areas via options available in a 2nd year, or by articulation to an HE institute at 1st or 2nd year.

The HNC Computing course aims to equip students with the skills leading to a variety of employment opportunities at an introductory level. A student can enhance her or his knowledge and skills by articulating to the 2nd year of this HNC award, which will be developed immediately after the validation of this course. Currently, the available routes leading to the enhancement of technical knowledge and skills for candidates is to study HND Computing: Software Development or HND Computing: Technical Support.

## TARGET CANDIDATES

This award is designed to offer candidates academic and technician training leading to the skills necessary to design, implement and support IT systems in a vast range of industries. The award is targeted at candidates who have the formal education requirement and –

- Who intend to leave school and further their career path in a college
- Who intend to progress their career after the study of either the NQ in Computing and/or Information Systems
- Who leave employment with the intention of changing their career path
- Who are unemployed and wish to study to assist gaining employment
- Who wish to study on a part-time (day or evening) or day-release mode

At the discretion of a centre, a candidate may be allowed to enter the award based on their previous experience in conjunction with the entry requirements. Experience has shown that mature candidates often study this award and then go on to study vendor qualifications in order to gain employment.

A candidate may move on to study at a higher level at a college or use the award to articulate to a degree course.

## RELATIONSHIP WITH OTHER AWARDS

### HND Computing

Most candidates wishing to progress to an HND will progress to HND Computing – currently envisaged to be the revised HND Computing: Software Development and HND Computing: Technical Support. This award has been designed with this progression route firmly in mind.

However, the broad nature of the HNC means that it would also be possible for candidates to progress to HNDs in other areas of computing.

### Links to Vendor Qualifications

Candidates undertaking specified HN units using Vendor official curriculum (Appendix 2 – Professional Development Awards) will gain appropriate knowledge and understanding and may sit examinations leading to the Vendor qualifications once they have gained sufficient practical experience.

The recent SQA/Microsoft/Vendor partnerships with the delivery of the Microsoft/Vendor official curriculum leads to a number of specialised PDAs which are listed in Appendix 2.

### Links to Professional Bodies

The British Computer Society (BCS) (www.bcs.org.uk) was consulted throughout the development of the pilot and now the revised award developments. A unit called *Professional Issues in Computing* is included in the optional section of this award as well as the HND Computing: Software Development and the HND Computing: Technical Support. Colleges and other centres may apply for BCS approval.[1] It is anticipated that candidates from BCS approved centres gaining the HNC Computing award may obtain an exemption status from the BCS.

[1] BCS Approval for a centre involves the BCS checking that centre staff are appropriately qualified, the centre has appropriate equipment and that there are suitable quality procedures in place.

The Institute for the Management of Information Systems (IMIS, formerly the IDPM: Institute of Data Processing Management) have also been consulted during the pilot award developments and have confirmed that candidates achieving the HNC/D would be offered direct entry to the IMIS Graduate Diploma. They would also be eligible for direct entry to IMIS Associate membership.

The Linux Professional Institute (LPI) offer examinations in Linux. Students undertaking the HN units *DH3A 34 Multi User Operating Systems*, *D75S 35 Computer Networks: Administering Network Systems* and *DH31 34 Computer Networks: Building Local Area Networks* will gain knowledge and understanding to help them prepare for the LPI examinations, should they wish to do so.

## RATIONALE FOR STRUCTURE AND CONTENTS

The awards are designed for those who will design, implement and support IT systems in a vast range of industries. The HN Computing award has a long history and is extremely popular with students and well recognised in industry. This award helps to satisfy the government's stated aims of developing the 'knowledge economy' and the IT industry, of enhancing the IT skills of the population and of closing the IT skills gap and so increasing economic competitiveness. This 'revised' course reflects the skills most in demand in today's IT industry developed under the umbrella of the SQA HN Design Principles.

The HNC Computing is a general computing award that allows candidates to gain skills and knowledge in software development, technical support, internet technologies and core skills. This award is aimed at those employed, or wishing to be employed, in roles such as computer technician, trainee software developer or IT help-desk officer. The award has been designed to allow candidates to progress to *either* HND Computing: Software Development *or* HND Computing: Technical Support. Articulation to second year of a Scottish degree in Computing/Information Technology is also possible, however, it is normal for a candidate to have achieved 120 SCOTCAT points to gain entry into 2nd year of any degree course.

The HNC Computing award is designed for both full-time, day-release and part-time candidates. The revised SQA HN Design Principles require 12 credits for the award of an HNC (previously within the pilot award 15 credits were required using the HN Design Rules). Concern was expressed by Centres that the 15-credit requirement would make the HNC Computing less attractive to part-time candidates, who may or may not be currently employed in a computing/IT role when compared to other HNCs developed under the SQA HN Design Principles. In addition, an optional *Employment Experience 2* unit has been included in the HNC frameworks in order to allow currently- employed students to undertake a course of study relevant to their occupational role with the support of their employer.

The need for the qualifications has been clearly identified. These awards can contribute to an overall strategy for reducing the IT skills gap and enhancing Scottish prosperity by enabling further expansion of the 'knowledge economy'.

The evidence of support from employers and universities indicates that the structure and content of the awards meet the needs identified. Evidence from First Destination Statistics of students achieving HND Computing awards indicate that around 70% of successful students currently go on to further study with the remaining 30% entering employment.

In designing the award, the HNCRAG (HN Computing Review Advisory Group (previously the Steering Group) has been fully aware of the need for qualifications which will allow articulation to a second year of the award suite (these paths to be identified in the next stage of the review process) and degree courses, whilst at the same time containing relevant technical and transferable skills which will enable immediate entry to employment. HNCRAG believes that an appropriate balance between 'academic' and 'vocational' (ie between knowledge and its practical application) has been achieved. The links with vendor qualifications (Microsoft Office Specialist, ie MOS) should ease the transition into employment. The HNC Computing will provide articulation (under the current review) to the revised HND Computing: Software Development and the revised HND Computing: Technical Support which offer core units leading to MCSD

(Microsoft Certified Solutions Developer) and MCSE (Microsoft Certified Systems Engineer). Additional units could be added as local options to a centre's framework that would create opportunities to embed additional PDA framework(s) within the centre's course format.

The award would form a natural progression from the Scottish Group Award at Higher in Computing and Information Systems and will enable progression to a second year of the HN Computing awards. Candidates with HNC Computing and appropriate work experience may also enter one of a number of Professional Development Awards (PDAs) or 2nd year degree programmes at selected universities. The HNC award (96 SCOTCAT points) also enables articulation to a range of computing/IT degrees, however, it is normal and probably necessary for a candidate to have achieved 120 SCOTCAT points to gain entry into 2nd year of any degree course.

The HNC Computing provides the knowledge and understanding for some aspects of the S/NVQs in IT.

The structure of the award allows a centre to deliver the HNC Computing as a foundation course for a candidate to progress to HE. Articulation has proved difficult for candidates, in a number of cases, to progress at the correct level at HE mapping to the SCQF. The framework will allow a candidate to progress to the revised HND Computing: Software Development, the revised HND Computing: Technical Support and other possible areas. This HNC Computing framework allows a centre to map a study route for candidates covering a specific stream at the HNC level. (See *Appendix 4 – HNC Computing - suggested pathways*) If an HNC Computing pathway contains a programming unit it allows for a design methodology approach, ie object oriented or structured, and also for a development platform based on object oriented, structured, applications development including a programming route based on SQL and web development. Choices can therefore be made which match the centre's own local environment and requirements.

A generic planning unit is mandatory within the HNC Computing framework and it is expected that this will be delivered along with an 'associated' unit. The knowledge and skills introduced in this unit is to further develop the planning skills of a candidate. It is recommended that this unit is delivered holistically alongside an associated (ie practical) unit. The QDT recommends that the following would be most appropriate as associated units –

- *DH31 34 Computer Networks: Building Local Area Networks*
- *DH2W 35 Computer Hardware: Building a Network PC*
- *DH2R 34 Multimedia: Developing Multimedia Applications*
- *DH34 35 Software Development: Event Driven Programming*
- *DH3C 35 Software Development: Object Oriented Programming*
- *DH3E 35 Software Development: Structured Programming*
- *DH32 35 Software Development: Developing for the World Wide Web*
- *DH30 35 Software Development: Applications Development*
- *DH3D 35 Software Development: Relational Database Systems*

It is expected that a student articulating to a 2nd year level course will have achieved an HNC Computing with additional credits which will take a candidate to a minimum of 120 SCOTCAT points. A centre can focus the delivery content of the award within a stream and a number are **suggested** in this document. (*Appendix 4 – HNC Computing – suggested pathways*) A centre should ensure that the content of their award allows clear and unrestricted articulation routes for their candidates.

## RATIONALE FOR CORE SKILL PROFILES

The importance of core skills has been recognised (the survey of employers rated core skills as being more important than any specific technical skills) and these are developed throughout the awards.

Both the research carried out for the pilot and the revised HN Computing awards have produced similar results, ie

| CORE SKILL | LEVEL IDENTIFIED THROUGH RESEARCH | MANDATORY CARRIER UNIT(S) |
|---|---|---|
| Communications | Higher | DH21 34 Working within a Project Team |
| Working With Others | Higher | DH21 34 Working within a Project Team |
| *Problem Solving Component (Critical Thinking)* | Higher | DH35 34 Computing: Planning |
| Numeracy | Intermediate 2 | DH2T 34 Computer Architecture 1 |
| Information Technology | Higher | D75X 34 Information Technology: Applications Software 1 |
| **CORE SKILL** | **LEVEL IDENTIFIED THROUGH RESEARCH** | **OPTIONAL CARRIER UNIT(S)** |
| Communications | Intermediate 2 | Workplace Communication in English |
| Working With Others | Higher | D77H 34 Employment Experience 2 |
| Problem Solving | Higher | DH2R 34 Multimedia: Developing Multimedia Applications<br>Dh3D 35 Software Development: Relational Database Systems |
| Numeracy (Components)<br>Using Graphical Information | Intermediate 2 | DH2V 35 Computer Architecture 2<br>D76E 34 Mathematics for Computing 1 |
| Using Number | Intermediate 2 | DH2V 35 Computer Architecture 2 |
| Using Number | Higher | D76E 34 Mathematics for Computing 1<br>D76F 35 Mathematics for Computing 2 |
| Information Technology | Higher | - |

Additional mapping has been carried out to ensure that the core skill of Numeracy can be raised from Intermediate 2 to Higher in the optional units available within the award if required by a centre.

The mapping of the complete core skill of Problem Solving is not automatic within the HNC Computing mandatory units. The mandatory unit *DH35 34 Computing: Planning* carries one of the Problem Solving elements (ie Critical Thinking) at Higher.

If a centre requires the complete core skill of Problem Solving at Higher to be credited to a candidate then it is hoped that an optional unit be selected which carries this full Core Skill. Whilst not mandatory, it is strongly recommended, that a candidate gain the HNC Computing with the complete core skill of Problem Solving at Higher.

# AIMS

## OF THE GROUP AWARD(S)

### GENERAL AIMS

This **HNC Computing** award has a range of broad aims which are generally applicable to all equivalent Higher Education qualifications. Some of these general aims are:

- To develop the candidate's knowledge and skills such as planning, analysing and synthesising.
- To develop employment skills and enhance candidates' employment prospects
- To enable progression within the Scottish Credit and Qualifications Framework
- To develop study and research skills
- To develop transferable skills including core skills
- To provide academic stimulus and challenge, and foster an enjoyment of the subject.

### SPECIFIC AIMS

The specific aims of the **HNC Computing** award are:

- To prepare students for employment in an IT/Computing-related post at technician level such as a technical support position or junior software development role.
- To develop a range of contemporary vocational skills (i.e. technical computing skills) relating to the use and support of IT systems appropriate to employment at technician (or equivalent) level.
- To provide a flexible curriculum to meet the needs of candidates in employment, recognising their existing experience and skills.
- To prepare students for progression to further study in Computing or a related discipline.

# RECOMMENDED ACCESS

## TO THE GROUP AWARD

### PRIOR EXPERIENCE AND/OR QUALIFICATIONS

As with all SQA qualifications, access will be at the discretion of the Centre and the following recommendations are for guidance only[2].

Some examples of appropriate formal entry qualifications are specified below. They are not exhaustive or mutually exclusive and may be offered in a variety of combinations.

(i) Scottish Group Awards in Computing and Information Technology at Intermediate 2 or Higher.
(ii) Any other relevant Scottish Group Award at Intermediate 2 or Higher.
(iii) Any two relevant National Courses at Higher together with three Standard Grade passes at level 3 or above.
(iv) An SVQ at level 2 or 3 in Computing, Information Technology or other relevant area.
(v) Relevant National Units at appropriate levels (e.g. core skills units at Intermediate 1 or 2*) combined with any of the above.

Different combinations of relevant National Qualifications, Vocational Qualifications and equivalent qualifications from other awarding bodies may also be acceptable, as would suitable vendor qualifications at an appropriate level.

It would be advisable for candidates to have some prior knowledge of computing or information technology although formal qualifications may not be necessary if suitable experience had been gained informally or through work experience. Centres may wish to give consideration to inferred or actual evidence of candidates' core skills.

Mature candidates with suitable work experience may be accepted for entry provided the enrolling centre believes that the candidate is likely to benefit from undertaking the award. This is based on the philosophy that entry is open to anyone who can show a reasonable potential for success through formal qualifications, accreditable experience or otherwise.

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[2] *Several years from now, when candidates applying for entry to HN programmes have a more complete core skills profile, it is recommended that candidates should have achieved all the core skills (Using Information Technology, Communication, Numeracy, Working with Others, and Problem Solving) at Intermediate 2. In the short term, however, it would be unrealistic to expect candidates to have formal evidence of achievement of all the core skills at Intermediate 2 – particularly mature or 'returning' candidates. Centres will have discretion to admit candidates who do not have the recommended core skills entry profile (i.e. all core skills at Intermediate 2) but all candidates who achieve any of these HN Computing awards* ***must*** *have attained the necessary core skills exit profile..*

## CORE SKILLS PROFILE FOR ENTRY

The recommended core skill profile for entry to this award is defined in the following table.

| CORE SKILL | LEVEL |
|---|---|
| **Communication** | |
| Oral Communication | Intermediate 2 |
| Written Communication | Intermediate 2 |
| **Numeracy** | |
| Using Graphical Information | Intermediate 2 |
| Using Number | Intermediate 2 |
| **Information Technology** | Intermediate 2 |
| **Problem Solving** | |
| Critical Thinking | Intermediate 2 |
| Planning & Organising | Intermediate 2 |
| Reviewing & Evaluating | Intermediate 2 |
| **Working with Others** | Intermediate 2 |

■ *Table 3: Recommended core skill entry profile*

# STRUCTURE

## OF THE GROUP AWARD

### G7GL 15 HNC COMPUTING ~ CONDITIONS OF AWARD

A total of 12 credits must be achieved, comprising 96 SCOTCAT points, to gain an HNC and this must incorporate 48 SCOTCAT points at SCQF level 7. An HNC will normally include one Graded Unit of 8 SCOTCAT points at SCQF Level 7.

To gain an HNC Computing it is necessary to gain a total of 6 credits from the mandatory units (Table A).

**Embedded Core skills or elements are shown below unit titles in brackets; some are subject to confirmation at the time of writing.**

### MANDATORY UNITS – TABLE A

| UNIT TITLE | | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Computer Architecture 1 | DH2T 34 | 1 | 7 |
| Information Technology: Applications Software 1 | D75X 34 | 1 | 7 |
| Computing: Planning | DH35 34 | 1 | 7 |
| Computer Operating Systems 1 | DH33 34 | 1 | 7 |
| Working within a Project Team | DH21 34 | 1 | 7 |
| Computing: Graded Unit 1 | H1J8 34* | 1 | 7 |

*Refer to History of changes for version change.

The remainder (ie 6 credits) being additional units selected from Table B or Table C bringing the total for the HNC Computing to 12 credits. However, if the unit in Table C is chosen then 1 credit can also be chosen from Table D.

### OPTIONAL UNITS – TABLE B - 6 CREDITS REQUIRED

| UNIT TITLE | CODE | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Software Development: Event Driven Programming | DH34 35 | 2 | 8 |
| Software Development: Object Oriented Programming(finish date 31.07.2015)<br>**OR** Software Development; Object Oriented Analysis and Design | DH3C 35<br>H172 35 | 2<br>2 | 8<br>8 |
| Software Development: Structured Programming | DH3E 35 | 2 | 8 |
| Software Development: Developing for the World Wide Web (Finish date 31.07.2015) **OR**<br>Software Development: Developing Websites for Multiplatform Use | DH32 35<br>H1J9 35 | 2<br>2 | 8<br>8 |
| Software Development: Applications Development | DH30 35 | 2 | 8 |

| | | | |
|---|---|---|---|
| Computer Hardware: Hardware Installation And Maintenance (finish date 31.07.2015) **OR**<br>Computer Hardware: Hardware Installation and Maintenance | DH2Y 34<br>H1FY 34 | 2<br>2 | 7<br>7 |
| Computer Hardware: Building A Network PC | DH2W 35 | 1 | 8 |
| Computer Architecture 2 | DH2V 35 | 1 | 8 |
| Computer Networks: Building Local Area Networks(finish date 31.07.2015)<br>**OR** Computer Networks: Building Local Area Networks | DH31 34<br>H17C 34 | 2<br>2 | 7<br>7 |
| Computer Networks: Administering Network Systems | D75S 35 | 2 | 8 |
| Computer Networks: Network Technology And Data Communications (Finish date 31.07.2015) **OR** Network Technology and Data Communications | D75V 35<br>H16V 35 | 2<br>2 | 8<br>8 |
| Multimedia: Developing Multimedia Applications | DH2R 34 | 2 | 7 |
| Information Technology: Information Systems And Services (Finish date 31.07.2015) **OR** Information Technology: Information Systems And Services | DH37 34<br>H1G0 34 | 1<br>1 | 7<br>7 |
| Internet: Introducing e-commerce | DH39 34 | 1 | 7 |
| Internet: Internet Client Services | DH38 34 | 1 | 7 |
| Information Technology: Applications Software 2 | D7CY 35 | 1 | 8 |
| Mathematics For Computing 1 | D76E 34 | 1 | 7 |
| Mathematics For Computing 2 | D76F 35 | 1 | 8 |
| Multi User Operating Systems | DH3A 34 | 1 | 7 |
| Providing Support to Users (finish date 31.07.2015) **OR**<br>Providing Support to Users | DH2X 34<br>H17T 34 | 1<br>1 | 7<br>7 |
| Software Development: Fourth Generation Environment | D76S 34 | 2 | 8 |
| Software Development: Relational Database Systems (finish date 31.07.2015) **OR**<br>Software Development: Relational Database Systems (finish date 31.07.2015) **OR**<br>Relational Database Management Systems | DH3D 35<br>FE77 35<br>H16W 35 | 2<br>2<br>2 | 8<br>8<br>8 |
| Employment Experience 2 | D77H 34 | 1 | 7 |
| SQL: Introduction | DH3J 34 | 1 | 7 |
| Supporting Users & Troubleshooting a Desktop Operating System | DM35 34 | 2 | 7 |
| Supporting Users & Troubleshooting Desktop Applications | DM34 34 | 1 | 7 |
| Client Operating System (finish date 31.07.2015) **OR**<br>Client Operating Systems | DF9M 34<br>H1EM 34 | 2<br>2 | 7<br>7 |
| Network Server Operating System | DF9N 34 | 2 | 7 |
| Network Infrastructure 1: Implementation and Management | DF9R 34 | 2 | 7 |
| Project Management 1 | DM30 35 | 1 | 8 |
| Software Development: Introduction | DF6C 34 | 1 | 7 |
| Personal Development Planning | DE3R 34 | 1 | 7 |
| Workplace Communication in English | DE1K 33 | 1 | 6 |
| Software Development: Programming in PL/SQL | F4TJ 35 | 2 | 8 |
| Publishing on the Internet | D4FB 34 | 2 | 7 |
| Communication: Producing and Presenting Complex Information | F577 34 | 1 | 7 |
| Project Management for IT | F1W0 34 | 1 | 7 |

| | | | |
|---|---|---|---|
| Manage Database Systems using SQL | F1VY 34 | 1 | 7 |
| Games Development: Object Oriented Programming | F86A 35 | 3 | 8 |
| Game Physics | F86H 35 | 2 | 8 |
| Web Development Fundamentals | F203 34 | 1 | 7 |
| Structured Programming for Games | F8HC 35 | 3 | 8 |
| User Interface Design | F1VV 34 | 1 | 7 |
| Web Server Platform | F6BM 35 | 2 | 8 |
| Work Role Effectiveness **OR**<br>Work Role Effectiveness | DG6E 34<br>DG6G 35 | 3<br>3 | 7<br>8 |
| Professional Issues in Computing | F0N0 35 | 2 | 8 |
| Web Design: An Introduction | DV5M 34 | 1 | 7 |
| Configuring a Desktop Operating System | FK89 34 | 2 | 7 |
| Troubleshooting a Desktop Operating System | FK8A 34 | 2 | 7 |
| Managing a Desktop Operating System Deployment | FK88 35 | 2 | 8 |
| Web Design: An Introduction | DV5M 34 | 2 | 8 |
| Professionalism and Ethics in Computing (mandatory in new HNC Computing) | H1F7 34 | 1 | 7 |
| Team Working in Computing (mandatory in new HNC Computing) | H178 34 | 1 | 7 |
| Developing Software: Introduction (mandatory in new HNC Computing) | H173 34 | 1 | 7 |
| Computer Systems Fundamentals (mandatory in new HNC Computing) | H175 34 | 1 | 7 |
| Troubleshooting Computing Problems (Mandatory in new HNC Computing) | H177 34 | 1 | 7 |

**OPTIONAL UNIT – TABLE C - (IF THIS IS CHOSEN, ONE UNIT FROM TABLE D MAY ALSO BE CHOSEN)**

| UNIT TITLE | CODE | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Systems Development: Introduction(finish date 31.07.2015) **OR**<br>Systems Development: Introduction | DH3F 34<br>H180 34 | 1<br>1 | 7<br>7 |

**OPTIONAL UNITS – TABLE D (ONLY ONE MAY BE CHOSEN PROVIDED THAT THE UNIT IN TABLE C HAS ALSO BEEN CHOSEN)**

| UNIT TITLE | CODE | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Systems Development: Object Oriented Design (Introduction) | DH3G 34 | 1 | 7 |
| Systems Development: Structured Design Methods (Introduction) | DH3H 34 | 1 | 7 |

**OPTIONAL UNITS – TABLE E ( UP TO 2 CREDITS REQUIRED)**

| UNIT TITLE | CODE | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Hardware Concepts | DG0K 33 | 1 | 6 |
| Operating Systems Concepts | DF9L 33 | 1 | 6 |
| **OR** | | | |
| Computing: PC Hardware and Operating System Essentials (*finish date 31.07.2015)* **OR** Computing: PC Hardware and Operating System Essentials | F1XA 34<br>H17E 34 | 1<br>1 | 7<br>7 |
| Computing: PC Hardware and Operating System Support *(finish date 31.07.2015)* **OR** Computing: PC Hardware and Operating System Support | F1X9 34<br>H17F 34 | 1<br>1 | 7<br>7 |

**LOCAL OPTIONAL UNITS – F (UP TO 2 CREDITS REQUIRED)**

| UNIT TITLE | CODE | CREDIT VALUE | SCQF LEVEL |
|---|---|---|---|
| Software Development: Applications Development | D76N 34 | 2 | 7 |
| Internet: Web Development | DF60 35 | 2 | 5 |
| Introductory Mathematics for Computing | A5NY 34 | 1 | 7 |
| Database Design and Implementation | DG0G 35 | 2 | 8 |
| Computer Operating System 2 | DM2X 35 | 1 | 7 |
| Developing Skills for Personal Effectiveness | DF4E 34 | 1 | 7 |
| User Interface Development | DE34 34 | 1 | 7 |
| 3D Modelling and Animation | DE2N 35 | 2 | 8 |
| Web Development: Essential Content | F1YY 34 | 2 | 7 |
| Network Concepts | DF9P 34 | 2 | 7 |
| Wireless and Mobile Technology | DM2W 35 | 1 | 8 |
| Database Design Fundamentals | DV6E 34 | 1 | 7 |
| PC: First Line Support | DV6L 34 | 1 | 7 |
| Work Experience | DV0M 34 | 1 | 7 |
| Software Development: Developing Small Scale Standalone Applications | H17W 34* | 2 | 7 |
| Networking Technology *(finish date 31/07/2013)*<br>**OR** Networking Technology | DF9X 35<br>FR24 35 | 2<br>2 | 8<br>8 |
| Routing Technology *(finish date 31/07/2013)*<br>**OR** Routing Technology | DF9Y 35<br>FR22 35 | 2<br>2 | 8<br>8 |
| Professional Issues in Computing | F0N0 35 | 2 | 8 |

*Refer to History of Changes for version change.

## GRADED UNITS

### SUMMARY

The HNC Computing Graded Unit – Examination credit requires the candidate to undertake a 3 hour written examination in one continuous session. This examination-based group award Graded Unit is closed book.

Extensive research was carried out with the agreement of the HNCRAG to decide on the most appropriate type for a Graded Unit at this level.

### HOW THE GRADED UNITS INTEGRATE THE PRINCIPAL AIMS OF THE AWARD(S)

This group award Graded Unit 1 (DH36 34) is designed to provide evidence that the candidate has achieved the following principal aims of the HNC Computing –

- To develop the candidate's knowledge and skills such as planning, analysing and synthesising
- To develop study and research skills
- To prepare students for progression to further study in computing or a related discipline.

This Graded Unit covers the following mandatory units –

- DH2T 34 Computer Architecture 1
- DH35 34 Computing: Planning
- DH33 34 Computer Operating Systems 1

The instrument of assessment for this Graded Unit should be unseen and closed book with the assessment being conducted in controlled and invigilated conditions. No calculators are allowed, however, a centre may distribute paper handouts of the ASCII and Unicode tables to candidates that can be used alongside the question paper (if appropriate).

The instrument of assessment consists of 2 sections with 30 marks being available in Section 1 and 70 marks being available in Section 2 with a defined spread across the related units.

## CORE SKILLS

The recommended entry and exit core skill profiles for this award are defined in the table below.

| CORE SKILL | ENTRY PROFILE | EXIT PROFILE |
|---|---|---|
| **Communication** | | |
| Oral communication | Intermediate 2 | Higher |
| Written communication | Intermediate 2 | Higher |
| **Numeracy** | | |
| Using Graphical Information | Intermediate 2 | Intermediate 2 |
| Using Number | Intermediate 2 | Intermediate 2 |
| **Information Technology** | Intermediate 2 | Higher |
| **Problem Solving** | | |
| Critical Thinking | Intermediate 2 | Higher |
| Planning & Organising | Intermediate 2 | Higher |
| Reviewing & Evaluating | Intermediate 2 | Higher |
| **Working with Others** | Intermediate 2 | Higher |

■ *Table 4: Core skills – recommended entry and exit profiles*

SCQF Level 6 is the most advanced level of Core Skill currently defined by the Scottish Qualifications Authority. The QDT considered it appropriate to recommend Intermediate 2 as an entry level for all Core Skills for HNC. Candidates who had completed a Scottish Group Award at Higher would have Intermediate 2 or above in each of the Core Skills.

It is recognised that many candidates, particularly adult returners, may not possess a specific Core Skills Profile on entry and hence entry level is recommended only. The recommended exit level Core Skills Profile is what the QDT considered would denote the level of proficiency normally required to enable candidates to derive the maximum benefit from studying the HNC/HND Computing awards in terms of opportunities for further study (including Higher Education), personal development and employment.

Market Research targeted mainly at industry gave a high prominence to the importance of Core Skills. What was most noticeable was the demand for communication, problem solving and the working with others core skills. A high level of proficiency was expected among employers for the IT core skill.

The QDT considered it important to develop each of these core skills within the HNC award, and thus the recommended exit level for the core skills profile has been set at Higher, with the exception of Numeracy, which has remained at Intermediate 2 and is embedded within the mandatory *DH2T 34 Computer Architecture 1* unit.

A centre should be aware that the full core skill of Problem Solving at Higher **can only** be gained by a candidate's undertaking the study of the relevant optional unit as identified in the section **'Rationale for Core Skill Profiles'**. One element within the Problem Solving core skill (ie Critical Thinking) at Higher can be gained by all candidates via the mandatory unit *DH35 34*

*Computing: Planning*. The QDT recommends that the *DH35 34 Computing: Planning* unit is delivered alongside one of a number of possible 'associated' units, all of which carry the full core skill of Problem Solving at Higher. The associate units are –

- *DH2R 34 Multimedia: Developing Multimedia Applications*
- *DH3D 35 Software Development: Relational Database Systems*

The QDT gave due consideration to setting the Numeracy core skill exit profile to Higher level, although feedback from industry rated Numeracy as the least significant among the five Core Skills. All things considered, the consensus of the HNCRAG and QDT was to embed this core skill at Intermediate 2 in the mandatory *DH2T 34 Computer Architecture 1* unit (*DH2V 35 Computer Architecture 2* carries both elements of Numeracy, but at different levels - *Using Number* is at Higher but *Using Graphical Information* is at Intermediate 2*).*

It should be noted that for candidates wishing to gain Numeracy at Higher, it is possible to achieve the Using Number component at Higher by completing the optional units *Mathematics for Computing 1 (D76E 34* -This unit also carries the Using Graphical Information element, but at Intermediate 2 only) or *D76F 35 Mathematics for Computing 2*.

Alternatively a centre might wish to request that the unit *Mathematics for Computing (A5PO 35*), which contains the entire Numeracy core skill at Higher be included in the local options section of the framework.

The QDT agreed that to force a Higher level Numeracy exit profile at HNC would detract from the vocational nature of the award and place a greater emphasis on Core Skills rather than the technical skills.

Working with Others and Communication are carried by the mandatory unit *DH21 34 Working within a Project Team*. *D77H 34 Employment Experience 2* also carries the Core Skill Working with Others at Higher.

The IT core skill is available within the mandatory unit *D75X 34 Information Technology: Applications Software 1* unit.

# APPROACHES TO DELIVERY AND ASSESSMENT

OF THE GROUP AWARD(S)

## CONTEXT & CONTENT

Although conditions will vary between centres in terms of resources, staff and student profiles, timetabling constraints, etc., the assessment context of individual units has been set within a typical assessment loading for an HNC. In the majority of units there will normally be one assessment in a closed book setting which will test the underpinning knowledge and skills. This methodology is to ensure that candidates attain the standards needed to use units as building blocks which allow for progression through the HNC and HND frameworks. A large proportion of units take a 'project' approach using the product of a previous assessment as the foundation of the next. The purpose is to give the candidate a true reflection of how items being studied integrate and relate to industrial practice. Centres are encouraged to take a holistic approach where possible, by assessing across a number of outcomes within single units or across a number of units. Some of the evidence requirements may be produced using e-assessment. This may take the form of e-testing (for knowledge and understanding) and/or e-portfolios (for practical abilities). The use of an e-portfolio approach to assessment is also encouraged. A number of units have being streamlined to allow a composite approach to studying a particular grouping or theme that will offer additional flexibility for course designers by adding possible HND pathways.

## ASSESSMENT STRATEGY

There are two types of unit within this award: (1) ungraded units; and (2) a Graded Unit. Both types of unit are **internally assessed** and **externally moderated**.

Ungraded units are assessed on a pass/fail basis. The assessment of ungraded units takes the form of practical assignments and knowledge assessments. Assessment exemplars are provided for each mandatory unit; these exemplars should be read in conjunction with the relevant unit specification to fully define the national standard.

This award includes a Graded Unit which takes the form of a written examination. The purpose of this Unit is to ensure that candidates possess the key knowledge expected of IT practitioners and also to facilitate progression to Higher Education. Candidates who pass the Graded Unit will receive a grade between A and C. The Graded Unit specification defines the standard of performance required to achieve each of these grades. An assessment exemplar is provided to exemplify the expected standard of this examination.

The Qualification Support Team (QST) will commission additional assessment exemplars to illustrate the standard of the written examination. If centres elect to use these exemplars as operational papers, they must ensure that they are sat sight-unseen by their candidates.

## USE OF E-ASSESSMENT

The opportunity and/or decision for a centre to utilise a Virtual Learning Environment or a Managed Learning Environment remains within the organisation and management of each centre. However, the use of e-assessment is encouraged and could be managed in a number of ways.

It has been the intention of the QDT throughout the planning of this revised course to identify specific areas where on-line assessment techniques for closed book assessments could be used in the assessment process. Common terminology has been used throughout the units (though only in those which have actually been reviewed) in the revision process. This common terminology is detailed below –

"There is an opportunity for a candidate to be assessed on-line subject to meeting the prescribed assessment conditions.

If a centre is presenting this assessment on-line the following assessment methods, where appropriate, may be selected –

- Multiple-choice
- Drag and drop
- Multiple response
- Mix and match
- A combination of the above

Further guidance is offered within the 'statement of standards' under the 'assessment' heading which is –

"It is expected that the questions will be of the multiple choice variety. Centres may consider the use of alternative questions types, particularly if using Computer Assisted Assessment approaches. However, care should be taken that the questions are valid and at an appropriate level. The use of simple true/false question responses is unlikely to achieve this."

A range of online assessment and testing methods for assessing under-pinning knowledge and skills for various HN Computing units are listed on the SOLAR website (www.solarproject.org). Please refer to this website for the most up-to-date list of assessments available as this can change frequently.

The use of e-portfolio assessment is encouraged in other areas and the following statement has been included in a number of the new specifications –

"Some of the evidence requirements may be produced using e-assessment. This may take the form of e-testing (for knowledge and understanding) and/or e-portfolios (for practical abilities). There is no requirement for you to seek prior approval if you wish to use e-assessment for either of these purposes so long as the normal standards for validity and reliability are observed. Please see the following SQA publications for further information on e-assessment: (1) *SQA Guidelines on Online Assessment for Further Education* (March 2003) and (2) *Assessment & Quality Assurance in Open & Distance Learning* (Feb. 2001)."

## OPEN LEARNING AND E-LEARNING

The awards may be delivered by open and distance learning methods, provided that adequate preparations are made. Additional planning and resources will be required for candidate support, assessment and reassessment. In respect of the latter, a combination of new and traditional authentication tools and techniques may have to be devised. Quality assurance procedures must also be sufficiently robust to fully support open and distance learning. Further advice and guidance is contained in the SQA publication *'Assessment and Quality Assurance for Open and Distance Learning – SQA February 2001'.*

## TRANSITION ARRANGEMENTS AND CREDIT TRANSFER

The purpose of this validation is to offer centres the opportunity to offer an HNC Computing in the next academic year designed within the SQAs new HN Design Principles so that there is parity across HN frameworks in other vocational sectors.

An extensive credit transfer mapping has been produced which offers a 3-way mapping between the current, pilot and revised pilot HNC Computing framework and portfolio of units. (*See Appendix 3 – Credit Transfer Mapping*)

## GUIDANCE FOR CANDIDATES AND PROGRESSION ROUTES

The award is designed to articulate with HND Computing courses offered across a range of educational institutions. Students successfully completing the HNC would be accepted onto the HND Computing: Software Development or HND Computing: Technical Support and/or any other which may be introduced at the next stage of this review.

The HNC Computing award can be used as a foundation to move forward and articulate into HE in a multitude of award areas which have a hybrid content containing computing as a discipline. The SCQF should assist a candidate in achieving this move, however, an HNC on its own collects 96 SCOTCAT points and it is normal, and would be expected, that a candidate would achieve 120 SCOTCAT points to gain entry into the 2nd year of any degree course.

Formal articulation agreements may exist between individual centres offering the HNC Computing and their feeder HE institution and this should be encouraged. It should be possible for a candidate to articulate directly to 2nd year at an HE institution by means of the SCQF, e.g.

- BSc Web Design
- BSc Computing
- BSc Applied Computing
- BSc Networking
- BSc Multimedia
- BSc Software Development
- BSc Computer Science

It is anticipated that most students will progress to a degree via the HND route i.e. HNC → HND → B.Sc. However, some students may progress directly from the HNC to a degree programme. The reduction in credit value (from 15 credits to 12) may affect articulation arrangements with Higher Education institutions.

Centres are advised to consult with relevant institutions to agree specific articulation arrangements. In many instances, HE institutions will continue to require 15 credits for articulation purposes; the additional credits (three) would be negotiated between the FEC and the HEI.

# OPPORTUNITIES TO ACHIEVE CORE SKILLS

The five core skills of Communication, Numeracy, Information Technology, Problem Solving and Working with Others have been designed into this award.

**Communications**

This core skill is embedded at SCQF level 6 (Higher) within the mandatory unit *DH21 34 Working within a Project Team*.

**Using IT**

This core skill is embedded at SCQF level 6 (Higher) within the mandatory unit *D75X 34 Information Technology: Application Software 1*.

**Working with Others**

This core skill is embedded at SCQF level 6 (Higher) within the mandatory unit *DH21 34 Working within a Project Team* and the optional unit *D77H 34 Employment Experience 2*.

**Problem Solving**

A centre should be aware that the full core skill of Problem Solving at Higher **can only** be gained by a candidate's undertaking the study of the relevant optional units as identified in the section **'Rationale for Core Skill Profiles'**. One element within the Problem Solving core skill (ie Critical Thinking) at Higher can be gained by all candidates via the mandatory unit *DH35 34 Computing: Planning*. The QDT recommends that the *DH35 34 Computing: Planning* unit is delivered alongside one of a number of possible 'associated' units, all of which carry the full core skill of Problem Solving at Higher. The associate units are –

- *DH2R 34 Multimedia: Developing Multimedia Applications*
- *DH3D 35 Software Development: Relational Database Systems*

Two elements within the Problem Solving core skill (ie Critical Thinking, Planning and Organising) at Higher can be gained* by a candidate studying the *DH35 34 Computing: Planning* mandatory unit. When a candidate studies one of the associated units the final element of the core skill (ie Reviewing and Evaluating) element at Higher is achieved*.

**Numeracy**

This core skill is embedded at SCQF level 5 (Intermediate 2) within the mandatory unit *DH2T 34 Computer Architecture 1*.

It should be noted that for candidates wishing to gain Numeracy at Higher, it is possible to achieve the Using Number component at Higher by completing the optional units *Mathematics for*

*Computing 1 (D76E 34* -This unit also carries the Using Graphical Information element, but at Intermediate 2 only) or *D76F 35 Mathematics for Computing 2*.

Alternatively a centre might wish to request that the unit *Mathematics for Computing (A5PO 35*), which contains the entire Numeracy core skill at Higher be included in the local options section of the framework.

The QDT agreed that to force a Higher level Numeracy exit profile at HNC would detract from the vocational nature of the award and place a greater emphasis on Core Skills rather than the technical skills.

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# APPENDICES

SUPPORTING EVIDENCE

## APPENDIX 1 : SQA HN DESIGN PRINCIPLES

HNCs and HNDs have supported technician, technologist and first line manager occupations for over 75 years, including progression in professional qualifications and other higher education awards. More recently, some HNs have been specifically designed to support progression from Modern Apprenticeships and to degrees.

In order to continue serving these occupations, HN programme designers should adhere to the following design principles. Design teams must always conduct market research, particularly among candidates and employers to ensure the continuing fitness for purpose of the HNs. Where this clearly indicates that any of those design principles marked with an asterisk needs to be re-interpreted or modified, SQA will work with the design team to develop alternatives, which are coherent with the other principles.

The validity of the market research and the fitness for purpose of the proposed alternatives will be confirmed at validation.

Further considerations for design teams are also indicated.

### A DESIGN PRINCIPLES

### SCQF Level and points

1. HNCs shall be designed to be at SCQF level 7 and shall comprise 96 SCQF credit points

2. HNDs shall be designed to be at SCQF level 8 and shall comprise 240 SCQF credit points

3. HNCs should incorporate at least 48 SCQF credit points at SCQF level 7

4. HNDs should incorporate at least 64 SCQF credit points at SCQF level 8

### Core Skills

5. HNC and HND programmes shall incorporate opportunities for candidates to develop Core Skills

6. *HNCs and HNDs should clearly include opportunities for candidates to develop Core Skills to levels required by the occupations or progression pathways the HNs support. This would mean all five Core Skills should be developed in every HN programme

## Mandatory Section

7. HNCs should include a mandatory section of at least 48 SCQF credits points including a Graded Unit. (See Principles 9 and 10 *under 'Graded Units'* below).

8. HNDs should include a mandatory section of at least 96 SCQF points, including Graded Units.

## Graded Units

9. *HNCs should include one Graded Unit of 8 SCQF credit points at SCQF level 7.

10. *HNDs should include one Graded Unit of 8 SCQF credit points at SCQF level 7 plus 16 SCQF credit points of Graded Unit (s) at SCQF level 8.

The purposes of Graded Units will be to assess the candidate's ability to integrate and apply the knowledge and/ or skills gained in the individual HN Units to demonstrate that they have the principal aims of the group award, and grade candidate achievement.

### B FURTHER CONSIDERATIONS

## HN Unit and group award Graded Unit Specifications

SQA produces guidance on how to write HN Unit and group award Graded Unit Specifications. These include templates and examples of how the specifications should be laid out. This guidance should always be used in developing new or revised HN Unit or group award Graded Unit Specifications. The minimum change to current Unit specifications would be to remove the merit statement and to add an SCQF level and credit points.

## Validation of HN Unit Specifications

A key part of validation is to confirm the proposed allocation of SCQF levels and credit points to each Unit, and this needs to be seen to be done consistently. Until the process of devolving this to centres is fully worked out, SQA will validate all new or revised HN Unit specifications. Centres may continue to develop HN Unit specifications for validation by SQA.

## Validation of HN Group Awards and group award Graded Units

Group award validation may continue to be done by those centres with devolved powers to do so. As Graded Units relate to the principle aims of a group award, these too may be validated by devolved centres as part of Group Awards.

## Validation periods

HN Units, Graded Units and Group Awards will be kept under review by design teams in order to ensure continuing fitness for purpose. Normally, these will be reviewed every five years or more frequently if recommended by validation panels. However, specific time periods of validation will not be specified

## Professional Development Awards (PDAs)

The following Professional Development Awards (PDAs) and associated Vendor links are embedded within the HNC Computing (Please refer to the HND Computing Arrangements Document for further information in PDA awards embedded within the HNDs):

| Award Code | Award Title | Associated Vendor | Units |
|---|---|---|---|
| G7W4 15<br>G8KD 47* | Certificate in Desktop Support (Finish date 31.07.2009)<br>PDA in Desktop Support | Microsoft Certified Desktop Support Technician | Mandatory – 3.0 credits needed<br>DM35 34 Supporting Users and Troubleshooting a Desktop Operating System (2.0)<br>DM34 34Supporting Users and Troubleshooting Desktop Applications (1.0) |
| G7W5 17<br>G8KC 47* | Advanced Certificate in System Administration (Finish date 31.07.2009)<br>PDA in System Administration | Microsoft Certified Systems Administrator | Mandatory – 6.0 credits needed<br>DF9M34 Client Operating System - (2.0)<br>DF9N34 Network Server Operating System - (2.0)<br>DF9R35 Network Infrastructure 1: Implementation and Management (2.0) |
| G7WN 17<br>TBC* | Advanced Certificate in Database Programming (Finish date 31.07.2007)<br>PDA in Database Programming | Oracle Internet Academy | Mandatory - 7.0 credits needed<br>DH3J 34 SQL: Introduction - (1.0)<br>DH3D 35Software Development: Relational Database - (2.0)<br>DH3E 35Software Development: Structured Programming (2.0)<br>DH3C 35Software Development: Object Oriented Programming (2.0) |
| G5X1 17 | Advanced Certificate in Software Development (Microsoft Visual Basic) - (Finish date 31.07.2010) | Microsoft | Mandatory -9.0 credits needed<br>D7JS 35Distributed Application Design and Development: An Introduction (3.0)<br>D7JT 35 Enterprise Application Development: An Introduction - (3.0) |

| Award Code | Award Title | Associated Vendor | Units |
|---|---|---|---|
| | | | D76R 35Software Development: Event Driven Programming (2.0)<br>D76W 34Software Development: Program Planning (1.0) |
| G5WF 15 | Certificate in Office Applications (Microsoft Office) - (Finish date 31.07.2010) | Microsoft | Mandatory - 2.0 credits needed<br>D75X 34 Information Technology: Applications Software 1 (1.0)<br>D7CY 35 Information Technology: Applications Software 2 (1.0) |
| G5X2 17 | Advanced Certificate in Networking (Microsoft Windows 2000) - (Finish date 31.07.2011) | Microsoft | Mandatory - 8.0 credits needed<br>D75S 35 Computer Networks: Administering Network Systems (2.0)<br>D75T 34 Computer Networks: Building Local Area Networks (2.0)<br>D75V 35 Computer Networks: Network Technology and Data Communications (2.0)<br>D7JW 35Computer Networks: Internet Network Connectivity (1.0)<br>D7JV 35 Enhancing Network Security and Configuring Remote Access Methods (1.0) |

The awards above that have an asterisk (*) are the new PDA re-titled awards. As these awards come under the PDA Design Principles and have an SCQF Level attached to them, candidates who have undertaken the units within this PDA as part of the their HNC Group Award can be certificated for the PDA as long as the Centre enters them for the Group Award under this code. There is no Group Award fee for the PDAs **highlighted by asterisk** – only the cost of the Units are charged. Please contact the Qualifications Team should you have any queries regarding this.

**Credit Transfer for Vendor Programs and Exams (as at July 2007)**

## 1. Introduction

HNC Computer Networking and HND Computer Networking & Internet Technology were validated by SQA in December 2003 and have been available to colleges since March 2004. These qualifications were designed to have a close relationship with major vendor examinations and academic programmes. HNC or HND programmes can assist candidates to prepare for vendor examinations and candidates who already hold vendor certifications can use these to obtain **partial credit transfer** for SQA Higher National Units.

Many of the units initially developed for the HN Computer Networking frameworks have since been incorporated into the HN Computing frameworks and a range of professional development awards (PDAs). The information given in this document applies irrespective of the context in which the Units are delivered.

This document is of an advisory nature. **The final decision on whether or not to grant credit transfer must be made by the centre and is subject to external moderation.** However, external moderators are unlikely to raise objections to any credit transfer based on the advice given here.

SQA provide clear criteria for deciding if two syllabuses are equivalent. All the following criteria must be satisfied if full credit transfer is to be recognised between both syllabuses:

1. *The syllabuses have the same SCQF levels.*
2. *The syllabuses have the similar credit values (or equivalent).*
3. *The syllabuses are equivalent in terms of core skill coverage.*
4. *The syllabuses relate to the same subject area and the main topics are common to both.*
5. *The syllabuses present a similar level of cognitive demand.*
6. *The syllabuses encompass similar skill-sets.*
7. *The syllabuses are contemporary in terms of terminology, techniques and technology.*
8. *Employers, admission officers and other users would perceive both syllabuses as broadly equivalent.*
9. *The assessment demands are similar in terms of candidate activity and performance criteria, or candidates would be equally likely to pass both assessments.*
10. *Special conditions (where they exist) are applicable to both syllabuses.*

Since the units in the Computer Networking frameworks were designed to match closely to vendor examinations, all of the above criteria can be met.

**However, vendor examinations only provide evidence of a candidate's knowledge and understanding. As they have no practical component, they cannot provide evidence of a candidate's practical skills. Thus, credit transfer granted to a candidate on the basis of vendor examination passes will normally only cover the knowledge and understanding components of an HN Unit.**

Most of the units in the Networking frameworks are assessed by means of two components – (1) a **restricted response test**, which assesses knowledge and understanding; and (2) a **logbook** which records the practical skills demonstrated by the candidate.

**Credit transfer for a vendor examination will normally relate only to the restricted response test and candidates will still be required to demonstrate their practical skills by completing the logbook as described in the unit specification. This should not be an arduous task for any candidate who possesses genuine practical skills in the area under consideration.**

In most of the units, both knowledge and understanding and practical skills are assessed in each outcome. However, in a few units there are outcomes which relate only to knowledge and understanding, or only to practical skills. In those instances centres may wish to offer credit transfer on an outcome-by-outcome basis. As always, this will be subject to external moderation.

Candidates who are physically attending a college course will be required to demonstrate their practical skills to the satisfaction of the course tutor, normally by completion of the unit logbook. Candidates undertaking the course on a distance learning basis will be required to demonstrate their skills to the satisfaction of their appointed mentor or assessment supervisor for subsequent moderation by the centre. Again, this will normally be done by completion of the unit logbook. Further advice and guidance is available in the SQA publication *Assessment and Quality Assurance for Open and Distance Learning* – SQA February 2001.

**However, some vendors offer academic or commercial training programmes which involve assessment and recording of practical skills in addition to knowledge and understanding**. For example:

- candidates who have successfully completed a Microsoft Official Curriculum (MOC) course **delivered by a Microsoft IT Academy or a Microsoft Certified Partner for Learning Solutions (CPLS)** receive a Certificate of Achievement which provides evidence that they have successfully completed the practical aspects of the course. Credit transfer can also be granted where courses have been delivered using the equivalent Microsoft Official Academic Course (MOAC) and a Course Achievement Certificate obtained.

- candidates who complete the **Cisco Network Academy Programme** carry out extensive practical work, assessed by means of skills tests, which demonstrates their practical abilities as well as their knowledge and understanding.

In cases like these, **where there is clear evidence of the practical abilities demonstrated by candidates,** credit transfer can be given for both the knowledge and understanding and practical skills components of a unit.

**The following guidance relates to specific vendor certification. Centres are free to consider any form of alternative evidence, and accept this as evidence of competence if they consider that it fully satisfies a unit's requirements. However, centre decisions are subject to external moderation.**

## 2. Credit Transfer for Microsoft Programs and Certifications

### 2.1 Credit transfer for knowledge and understanding only

**Candidates who can produce evidence that they have passed any of the following Microsoft examinations can be granted credit transfer for the knowledge and understanding component of the relevant Unit. They will still be required to demonstrate their practical skills (by completion of a logbook) before they can be awarded the unit.**

#### 2.1.1 Windows Server 2003 Track Examinations

| Exam Number | Exam Title | Unit Number | Unit Title |
|---|---|---|---|
| 70-270 | Installing, Configuring, and Administering Microsoft Windows XP Professional | DF9M 34 | Client Operating System |
| 70-290 | Managing and Maintaining a Microsoft Windows Server 2003 Environment | DF9N 34 | Network Server Operating System |
| 70-291 | Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure | DF9R 35 | Network Infrastructure 1: Implementation and Management |
| 70-293 | Planning and Maintaining a Microsoft Windows Server 2003 Network Infrastructure | DG00 35 | Network Infrastructure 2: Planning and Maintenance |
| 70-294 | Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure | DG01 35 | Directory Services Infrastructure |
| 70-297 | Designing a Microsoft Windows Server 2003 Active Directory and Network Infrastructure | DG0D 36 Note1 | Network Design: Directory Services and Infrastructure |
| 70-298 | Designing Security for a Microsoft Windows Server 2003 Network | DG0E 36 Note1 | Network Design: Security |
| 70-284 | Implementing and Managing Microsoft Exchange Server 2003 | DG07 35 | Mail Server Administration |
| 70-228 | Installing, Configuring, and Administering Microsoft SQL Server 2000 Enterprise Edition | DG0F 35 | Database Server Administration |
| 70-229 | Designing and Implementing Databases with Microsoft SQL Server 2000 Enterprise Edition | DG0G 35 | Database Design and Implementation |
| 70-299 | Implementing and Administering Security in a Microsoft Windows Server 2003 Network | DG08 35 | Network Security: Implementation and Administration |
| 70-292 | Managing and Maintaining a Microsoft Windows Server 2003 Environment for an MCSA Certified on Windows 2000 | DF9N 34 and DF9N 35 | Network Server Operating System and Network Infrastructure 1: Implementation and Management |
| 70-296 | Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Environment for an MCSE Certified on Windows 2000 | DG00 35 and DG01 35 | Network Infrastructure 2: Planning and Maintenance and Directory Services Infrastructure |

**Notes:**

**1.** These HN units are assessed only by a restricted response test – there is no logbook required. Therefore a pass in the corresponding Microsoft examination can give credit transfer for the entire unit without additional evidence of practical skills.

### 2.1.2 Windows 2000 to Windows Server 2003 Upgrade Courses and Examinations

| | | | |
|---|---|---|---|
| 70-292 | Planning, Implementing, Managing and Maintaining a Microsoft Windows Server 2003 Environment for an MCSE Certified on Windows 2000 | DF9N 34<br>and<br>DF9N 35 | Network Server Operating System<br>and<br>Network Infrastructure 1: Implementation and Management |
| 70-296 | Planning, Implementing, Managing and Maintaining a Microsoft Windows Server 2003 Environment for an MCSE Certified on Windows 2000 | DG00 35<br>and<br>DG01 35 | Network Infrastructure 2: Planning and Maintenance<br>and<br>Directory Services Infrastructure |

### 2.1.3 Windows 2000 Track Examinations

| Exam No. | Exam Title | Unit No. | Unit Title |
|---|---|---|---|
| 70-210 | Installing, Configuring, and Administering Microsoft Windows 2000 Professional | DF9M 34 | Client Operating System |
| 70-215<br>Note 2 | Installing, Configuring, and Administering Microsoft Windows 2000 Server | DF9N 34 | Network Server Operating System |
| 70-216<br>Note 2 | Implementing and Administering a Microsoft Windows 2000 Network Infrastructure | DF9R 35 | Network Infrastructure 1: Implementation and Management |
| 70-218<br>Note 2 | Managing a Microsoft Windows 2000 Network Environment | DG00 35 | Network Infrastructure 2: Planning and Maintenance |
| 70-217 | Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure | DG01 35 | Directory Services Infrastructure |
| 70-219<br>and<br>70-221<br>Note 3 | Designing a Microsoft Windows 2000 Directory Services Infrastructure<br>Designing a Microsoft Windows 2000 Network Infrastructure | DG0D 36 | Network Design: Directory Services and Infrastructure |
| 70-220 | Designing Security for a Microsoft Windows 2000 Network | DG0E 36 | Network Design: Security |
| 70-224 | Installing, Configuring, and Administering Microsoft Exchange 2000 Server | DG07 35 | Mail Server Administration |
| 70-228 | Installing, Configuring, and Administering Microsoft SQL Server 2000 Enterprise Edition | DG0F 35 | Database Server Administration |
| 70-229 | Designing and Implementing Databases with Microsoft SQL Server 2000 Enterprise Edition | DG0G 35 | Database Design and Implementation |
| 70-214 | Implementing and Administering Security in a Microsoft Windows 2000 Network | DG08 35 | Network Security: Implementation and Administration |

**Notes:**

2. There is no exact correspondence between the 2000 track exams and the 2003 track exams in this area. However, taken as a group, exams 70-215, 70-216 and 70-218 cover much the same ground as 70-290, 70-292 and 70-293. Candidates who have passed these three examinations could therefore be granted credit transfer for the knowledge and understanding component of units DF9N 34, DF9R 35 and DG00 35, but no credit transfer can be granted on a unit-by-unit basis.

3. In the 2000 track Directory Services Design and Infrastructure Design are distinct exams (70-219 and 70-221). In the 2003 track they are merged into a single exam (70-297).

### 2.1.4 MCDST Examinations

| Exam No. | Exam Title | Unit No. | Unit Title |
|---|---|---|---|
| 70-271 | Supporting Users and Troubleshooting a Microsoft Windows XP Operating System | DM35 34 | Supporting Users & Troubleshooting a Desktop Operating System |
| 70-272 | Supporting Users and Troubleshooting Desktop Applications on a Microsoft Windows XP Operating System | DM34 34 | Supporting User & Troubleshooting Desktop Applications |

**Note:** these units were not part of the original HN Computer Networking framework, but were added to it after being developed during the HN Computing review.

## 2.2 Credit transfer for complete units

**Candidates who can produce evidence that they have passed any of the following Microsoft examinations and can also produce a Certificate of Achievement showing that they have successfully completed the relevant course at a Microsoft IT Academy or a Microsoft Certified Partner for Learning Solutions (CPLS) can be granted credit transfer for the complete Unit.**

### 2.2.1 Windows Server 2003 Track Courses and Examinations

| Exam Number | Course Number | Course Title | Unit No. | Unit Title |
|---|---|---|---|---|
| 70-270 | 2272 | Implementing and Supporting Microsoft Windows XP Professional | DF9M 34 | Client Operating System |
| 70-290 | 2273<br><br>or<br>2274<br>and<br>2275 | Managing and Maintaining a Microsoft Windows Server 2003 Environment<br>Managing a Microsoft Windows Server 2003 Environment<br>Maintaining a Microsoft Windows Server 2003 Environment | DF9N 34 | Network Server Operating System |
| 70-291 | 2276<br><br>and<br>2277 | Implementing a Microsoft Windows Server 2003 Network Infrastructure: Network Hosts<br>Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure: Network Services | DF9R 35 | Network Infrastructure 1: Implementation and Management |
| 70-293 | 2278 | Planning and Maintaining a Microsoft Windows Server 2003 Network Infrastructure | DG00 35 | Network Infrastructure 2: Planning and Maintenance |
| 70-294 | 2279 | Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure | DG01 35 | Directory Services Infrastructure |
| 70-297 | 2282 | Designing a Microsoft Windows Server 2003 Active Directory and Network Infrastructure | DG0D 36 | Network Design: Directory Services and Infrastructure |
| 70-298 | 2830 | Designing Security for Microsoft Networks | DG0E 36 | Network Design: Security |
| 70-284 | 2400 | Implementing and Managing Microsoft Exchange Server 2003 | DG07 35 | Mail Server Administration |
| 70-228 | 2072 | Administering a Microsoft SQL Server 2000 Database | DG0F 35 | Database Server Administration |

| | | | | |
|---|---|---|---|---|
| 70-229 | 2073 | Programming a Microsoft SQL Server 2000 Database | DG0G 35 | Database Design and Implementation |
| 70-299 | 2823 | Implementing and Administering Security in a Microsoft Windows Server 2003 Network | DG08 35 | Network Security: Implementation and Administration |

### 2.2.2 Windows 2000 to Windows Server 2003 Upgrade Courses and Examinations

| | | | | |
|---|---|---|---|---|
| 70-292 | Workshop 2209 | Planning, Implementing, Managing and Maintaining a Microsoft Windows Server 2003 Environment for an MCSE Certified on Windows 2000 | DF9N 34 and DF9N 35 | Network Server Operating System and Network Infrastructure 1: Implementation and Management |
| 70-296 | Workshop 2210 | Planning, Implementing, Managing and Maintaining a Microsoft Windows Server 2003 Environment for an MCSE Certified on Windows 2000 | DG00 35 and DG01 35 | Network Infrastructure 2: Planning and Maintenance and Directory Services Infrastructure |

### 2.2.3 Windows 2000 Track Courses and Examinations

| Exam Number | Course Number | Course Title | Unit No. | Unit Title |
|---|---|---|---|---|
| 70-210 | 2151 and 2152 | Microsoft Windows 2000 Network and Operating System Essentials<br>Implementing Microsoft Windows 2000 Professional and Server | DF9M 34 | Client Operating System |
| 70-215 Note3 | 2151 and 2152 | Microsoft Windows 2000 Network and Operating System Essentials<br>Implementing Microsoft Windows 2000 Professional and Server | DF9N 34 | Network Server Operating System |
| 70-216 Note 3 | 2153 | Implementing a Microsoft Windows 2000 Network Infrastructure | DF9R 35 | Network Infrastructure 1: Implementation and Management |
| 70-218 Note 3 | 2126 | Managing a Microsoft Windows 2000 Network Environment | DG00 35 | Network Infrastructure 2: Planning and Maintenance |
| 70-217 | 2154 | Implementing and Administering Microsoft Windows 2000 Directory Services | DG01 35 | Directory Services Infrastructure |
| 70-219 and 70-221 | 1561 and 1562 | Designing a Microsoft Windows 2000 Directory Services Infrastructure<br>Designing a Microsoft Windows 2000 Networking Services Infrastructure | DG0D 36 | Network Design: Directory Services and Infrastructure |
| 70-220 | 2150 | Designing a Security-Enhanced Microsoft Windows 2000 Network | DG0E 36 | Network Design: Security |
| 70-224 | 1572 | Implementing and Managing Microsoft Exchange 2000 | DG07 35 | Mail Server Administration |
| 70-228 | 2072 | Administering a Microsoft SQL Server 2000 Database | DG0F 35 | Database Server Administration |
| 70-229 | 2073 | Programming a Microsoft SQL Server 2000 Database | DG0G 35 | Database Design and Implementation |

| | | | | |
|---|---|---|---|---|
| 70-214 | 2150<br>and<br>2153 | Designing a Security-Enhanced Microsoft Windows 2000 Network<br>Implementing a Microsoft Windows 2000 Network Infrastructure | DG08 35 | Network Security: Implementation and Administration |

**Notes:**

1. There no exact correspondence between the 2000 track exams and the 2003 track exams in this area. However, taken as a group, exams 70-215, 70-216 and 70-218 cover much the same ground as 70-290, 70-292 and 70-293. Candidates who have passed these three examinations and successfully completed the corresponding courses could therefore be granted credit transfer for units DF9N 34, DF9R 35 and DG00 35, but no credit transfer can be granted on a unit-by-unit basis.

### 2.2.4 MCDST Courses and Examinations

| Exam No. | Course No. | Exam Title | Unit No. | Unit Title |
|---|---|---|---|---|
| 70-271 | 2261 | Supporting Users and Troubleshooting a Microsoft Windows XP Operating System | DM35 34 | Supporting Users & Troubleshooting a Desktop Operating System |
| 70-272 | 2262 | Supporting Users and Troubleshooting Desktop Applications on a Microsoft Windows XP Operating System | DM34 34 | Supporting User & Troubleshooting Desktop Applications |

**Note:** these units were not part of the original HN Computer Networking framework, but were added to it after being developed during the HN Computing review.

**In the above tables, courses are identified by their Microsoft Official Curriculum (MOC) numbers. Credit transfer can also be granted where courses have been delivered using the equivalent Microsoft Official Academic Course (MOAC) and a Course Achievement Certificate obtained.**

**3. Credit transfer for the Cisco Network Academy Program (CNAP) and Cisco Certified Network Associate (CCNA) Exams.**

The main Cisco Network Academy Programme curriculum (CCNA) consists of four semesters, each of which is assessed by means of an end-of-semester test and a set of skills tests. Candidates who complete an end-of-semester test and the associated skills tests successfully can obtain credit transfer for the relevant HN Units as shown in the following table:

| Cisco Semester | HN Unit Number | HN Unit Title |
|---|---|---|
| Semester 1 | DF9X 35 | Networking Technology |
| Semester 2 | DF9Y 35 | Routing Technology |
| Semester 3 | DG09 35 | Switching Technology |
| Semester 4 | DG0A 35 | Internetworking Technology |

If the Cisco Skills Tests for the individual semesters are integrated to form a single project, in line with the guidance given in SQA's Exemplar Assessment for DGOH 35: Graded Unit: HND Computer Networking and Internet Technology, then credit transfer can also be given for the Graded Unit.

The Cisco Network Academy Program also offers a number of shorter curricula which are related to HN Units. These are also assessed by means of restricted response questions and practical labs and so can give credit transfer for complete units. The relevant curricula and units are as follows:

| Cisco Curriculum | HN Unit Number | HN Unit Title |
|---|---|---|
| IT Essentials 1 | DG0K 33<br>and<br>DF9L 33 | Hardware Concepts<br><br>Operating System Concepts |
| IT Essentials 2 | DF9W 34 | Server Concepts |
| Fundamentals of Wireless Networking | DG04 35 | Wireless Local Area Networks |

The Cisco Network Academy Programme also prepares candidates to sit the Cisco Certified Network Associate Exam (CCNA), either as a single exam or as two separate exams. Candidates can also sit these exams independently of the Network Academy Programme.

**Successful completion of these can give candidates credit transfer, for the knowledge and skills component only, as follows:**

| Cisco Curriculum | Exam Number | HN Unit Number | HN Unit Title |
|---|---|---|---|
| Cisco Certified Network Associate (CCNA) | 640-801 | DF9X 35<br>DF9Y 35<br>DG09 35<br>DG0A 35 | Networking Technology<br>Routing Technology<br>Switching Technology<br>Internetworking Technology |
| CCNA Introduction (INTRO)<br>and<br>CCNA Interconnection Cisco Networking Devices (ICND) | 640-821<br>and<br>640-811 | DF9X 35<br>DF9Y 35<br>DG09 35<br>DG0A 35 | Networking Technology<br>Routing Technology<br>Switching Technology<br>Internetworking Technology |

**If a candidate has attended an external course to prepare for the CCNA exam, centres can examine any evidence of practical work produced in order to determine whether a candidate is eligible for credit transfer for the practical component, otherwise the candidate must complete the relevant SQA Logbooks. The centre's decision will be subject to external moderation.**

**4. Credit Transfer for the Oracle Internet Academy Program**

The first year of the Oracle Internet Academy Program consists of a 180-hour course in Database Design and Programming which is assessed by a combination of restricted response tests and practical exercises. This course can provide credit transfer to two HN Units. There is no direct correspondence between the individual units and discrete elements of the Oracle course. This course can also help candidates prepare for the Introduction to Oracle 9i SQL Certification exam.

| Oracle Courses | HN Unit Numbers | HN Unit Titles |
|---|---|---|
| Database Design and Programming | DG0G 35<br>DH3 D35<br>**and**<br>DG03 34<br>DH3J 34 | Database Design and Implementation **or**<br>Software Development: Relational Database Systems<br><br>Programming in SQL **or**<br>SQL: Introduction |

The second year of the Oracle Internet Academy Program consists of a 180-hour course in Java Programming which is assessed by a combination of restricted response tests and practical exercises. This course can provide credit transfer to two HN Units. There is no direct correspondence between the individual units and discrete elements of the Oracle course.

| Oracle Courses | HN Unit Numbers | HN Unit Titles |
|---|---|---|
| Java Programming | DH3E 35<br>**and**<br>DH3C 35 | Software Development: Structured Programming<br><br>Software Development: Object Oriented Programming |

**5. Credit Transfer for CompTIA examinations**

**Candidates who successfully complete any of the undernoted CompTIA certification exams can receive credit transfer for knowledge and understanding component of the related HN Units, but must complete the logbook to demonstrate their practical skills.**

**There are no officially-recognised CompTIA courses which would automatically produce evidence of practical skills, but if candidates have already attended an external course centres can examine any evidence of practical work produced in order to determine whether a candidate is eligible for credit transfer for the practical component. The centre's decision will be subject to external moderation.**

| Exam Number | Exam Title | Unit Number | Unit Title |
|---|---|---|---|
| 220-301<br>Note 4 | A+ Core Hardware Technologies | DG0K 33 | Hardware Concepts |
| 220-302<br>Note 4 | A+ Operating System Technologies | DF9L 33 | Operating System Concepts |
| N10-002<br>N10-003 | Network+ | DF9P 34 | Network Concepts |
| SK0-001<br>SK0-002 | Server+ | DF9W 34 | Server Concepts |
| SY0-101 | Security+ | DG02 34 | Security Concepts |
| IK0-002 | i-Net+ | DF9R 35<br><br>DG00 35 | Internetworking Concepts 1: Development and Delivery Concepts<br>Internetworking Concepts 2: Security and Business Concepts |

**Note 4:** Candidates who have passed earlier versions of these examinations, ie: 220-201, 220-221, 220-202, 220-222 are also eligible for credit transfer on the same basis.

Other examining bodies, notably OCR and City & Guilds, have incorporated CompTIA certifications into their provision. Their versions of the CompTIA examinations would also be eligible for credit transfer on a similar basis, ie: successful completion of an examination could give credit transfer for the corresponding H unit, but additional evidence of practical skills would be required. The centre's decision would be subject to external moderation.

**6. Credit transfer for Certified Wireless Network Professional examination.**

Candidates who successfully complete the undernoted CWNP certification exam can receive credit transfer for knowledge and understanding component of the related HN Units, but must complete the logbook to demonstrate their practical skills.

| Exam Number | Exam Title | Unit Number | Unit Title |
|---|---|---|---|
| | Certified Wireless Network Administrator | DG04 35 | Wireless Local Area Networks |

There are no officially-recognised CWNP courses which would automatically produce evidence of practical skills, but if candidates have already attended an external course centres can examine any evidence of practical work produced in order to determine whether a candidate is eligible for credit transfer for the practical component. The centre's decision will be subject to external moderation.

## APPENDIX 3 : CREDIT TRANSFER MAPPING

*Transitional arrangements apply whenever an award is updated or replaced by another award. These arrangements relate to the various **HN Computing** awards which have been introduced between 1995 and 2005.*

*Transitional arrangements assist candidates to transfer between old and new awards. For example, a candidate may have partially completed an old HNC award and now wishes to complete her HNC using the new award; or a candidate may have completed an old HNC award and now wishes to progress to the new HND.*

*These arrangements relate to the following awards:*

- *G176 15 HNC Computing (validated 1995)*
- *G28W 16 HND Computing: Software Development (validated 1995)*
- *G28X 16 HND Computing: Technical Support (validated 1995)*
- *G5VS 15 HNC Computing (validated in 2001)*
- *G5VT 16 HND Computing: Software Development (validated 2001)*
- *G5VV 16 HND Computing: Technical Support (validated 2001)*
- *G7GL 15 HNC Computing (validated 2004)*
- *G7TT 16 HND Computing: Software Development (validated 2005)*
- *G7TR 16 HND Computing: Technical Support (validated 2005)*

*Transitional arrangements exist for:*

1. *conversion from HNC to HND*
2. *unit-by-unit credit transfer.*

### Conversion from HNC Computing to HND Computing

Special arrangements exist for candidates who have completed G176 15 HNC Computing (1995 framework) and who wish to progress to G7TT/G7TR HND Computing (2005 framework).

Please note that these arrangements **ONLY apply to candidates who have gained the full G176 15 HNC Computing group award**. These special arrangements **do not apply to candidates who possess G5VS HNC Computing (2001)** since the normal credit transfer arrangements apply to these candidates (see below).

An alternative route exists for candidates who possess G176 15 HNC Computing. This alternative route does not require candidates to pass DH36 34 Computing: Graded Unit 1.[3] An alternative route exists for each of G7TT HND Computing: Software Development and G7TR HND Computing: Technical Support. The alternative routes are provided in Section A.

Please note that these alternatives routes do not have separate group award codes. They are simply alternative routes to G7TT HND Computing: Software Development and G7TR HND Computing: Technical Support and can only be achieved by candidates achieving the full HNC Computing (G176 15)

### Unit by unit conversion

All candidates are eligible for unit-by-unit credit transfer.

[3] It is identical to the "standard" route in every other regard.

Unit by unit conversion permits candidates to convert old units to new units to allow them to gain credit towards the new HNC/HND awards. These arrangements are also known as *credit transfer*.
**All decisions relating to credit transfer remain with centres.** However, SQA has carried out an initial mapping between old and new units. Appendix 2 relates 1995 units to 2001 units. Appendix 3 relates 2001 units to 2004/5 units. We have not attempted to directly relate 1995 units to 2005 units; although the tables will be helpful in this regard, these decisions should be made on a candidate by candidate basis due to the large time difference between these qualifications.[4]

[4] Decisions on credit transfer between 1995 and 2004/5 units will depend on technologies, techniques and methodologies used.

## How does credit transfer work?

Credit transfer is used in lieu of the normal evidence requirements for a unit. Once the equivalence between two units is established, a candidate is not required to produce the normal evidence required for a unit if s/he already possesses an "equivalent" unit. The only evidence that the candidate requires to produce is evidence of completing the equivalent unit (which is normally evidenced by production of his/her Scottish Qualifications Certificate). Centres must retain proof of this (normally a photocopy of the candidate's SQC) for the purposes of internal and external moderation.

## How to use the tables

The credit transfer tables (Section B links 1995 units with 2001 units, Section C links 2001 units with 2004/5 units) have been designed to permit candidates to convert old units for new units. However, they may be used in both directions (for example, 2001 → 2004 and 2004 → 2001). This might be helpful to candidates who have commenced a new award but subsequently require to complete an old award (this is rare but occasionally arises). **Please note that one way credit transfer applies in some cases** (this is clearly denoted in the tables).

In some cases, groups of units (rather than single units) are deemed to be equivalent. In these cases, candidates are required to possess **all** the units in the group before credit transfer should be awarded.

## SECTION A

**ALTERNATIVE FRAMEWORK FOR CANDIDATES WHO POSSESS G176 HNC COMPUTING (1995)**

**G7TR HIGHER NATIONAL DIPLOMA COMPUTING: TECHNICAL SUPPORT**

A total of 30 credits must be achieved, comprising 240 SCOTCAT points, to gain an HND Technical Support and this must incorporate at least 64 SCQF points at SCQF level 8.

**Total credit value of award: 30 credits of which a minimum of 8 credits must be gained at SCQF Level 8.**

**Mandatory units**

A total of **17** credits must be gained by undertaking the credits from Table 1.

**Table 1 – All units must be undertaken (16 credits)**

| Unit No | Unit Title | Level | Credit |
|---|---|---|---|
| DH2T 34 | Computer Architecture 1 | 7 | 1 |
| DH33 34 | Computer Operating Systems 1 | 7 | 1 |
| DH35 34 | Computing: Planning | 7 | 1 |
| D75X 34 | Information Technology: Applications Software 1 | 7 | 1 |
| DH21 34 | Working within a Project Team | 7 | 1 |
| DF9M 34 | Client Operating Systems | 7 | 2 |
| DF9N 34 | Network Server Operating System | 7 | 2 |
| DM2X 35 | Computer Operating Systems 2 | 8 | 1 |
| DM30 35 | Project Management 1 | 8 | 1 |
| D75V 35 | Computer Networks: Network Technology and Data Comms | 8 | 2 |
| DN4P 35 | Computing: Group Award (Technical Support) Graded Unit 2 | 8 | 2 |
| DM3D 35 | Professional Issues in Computing | 8 | 2 |

**Optional units**

**Table 2 – Additional 13 credits must be selected from this table.**

| Unit No | UNIT TITLE | Level | Credit |
|---|---|---|---|
| DG0K 33 | Hardware Concepts | 6 | 1 |
| DF9L 33 | Operating Systems Concepts | 6 | 1 |
| D77H 34 | Employment Experience 2 | 7 | 1 |
| DH37 34 | Information Technology: Information Systems and Services | 7 | 1 |
| DH39 34 | Internet: Introducing e-commerce | 7 | 1 |
| DH38 34 | Internet: Internet Client Services | 7 | 1 |
| D76E 34 | Mathematics for Computing 1 | 7 | 1 |
| DH3A 34 | Multi User Operating Systems | 7 | 1 |
| DH2X 34 | Providing Support to Users | 7 | 1 |
| DH3J 34 | SQL: Introduction | 7 | 1 |
| DM34 34 | Supporting Users and Troubleshooting Desktop Applications | 7 | 1 |
| DH3F 34 | Systems Development: Introduction | 7 | 1 |
| DH3G 34 | Systems Development: Object Oriented Design (Introduction) | 7 | 1 |
| DH3H 34 | Systems Development: Structured Design Methods (Introduction) | 7 | 1 |
| DH2Y 34 | Computer Hardware: Hardware Installation and Maintenance | 7 | 2 |
| DH31 34 | Computer Networks: Building Local Area Networks | 7 | 2 |
| DH2R 34 | Multimedia: Developing Multimedia Applications | 7 | 2 |
| DM35 34 | Supporting Users and Troubleshooting a Desktop Operating System | 7 | 2 |
| DF9R 35 | Network Infrastructure 1: Implementation and Management | 8 | 2 |

| Unit No | UNIT TITLE | Level | Credit |
|---|---|---|---|
| DH2V 35 | Computer Architecture 2 | 8 | 1 |
| D7JW 35 | Computer Networks: Internet Network Connectivity | 8 | 1 |
| D7JV 35 | Enhancing Network Security and Configuring Remote Access Methods | 8 | 1 |
| DM39 35 | Internet: Client Side Web Scripting | 8 | 1 |
| D7CY 35 | Information Technology: Applications Software 2 | 8 | 1 |
| D76F 35 | Mathematics for Computing 2 | 8 | 1 |
| DM2Y 35 | Project Management 2 | 8 | 1 |
| DM3E 35 | Software Development: Advanced Programming | 8 | 1 |
| DM3G 35 | Software Development: Assembly Language and Interface Programming | 8 | 1 |
| DM31 35 | Software Development: Array Data Structures | 8 | 1 |
| DM2W 35 | Wireless and Mobile Technology | 8 | 1 |
| DH2W 35 | Computer Hardware: Building a Network PC | 8 | 1 |
| DM37 35 | Computer Hardware: Desktop Computer Troubleshooting | 8 | 2 |
| D75S 35 | Computer Networks: Administering Network Systems | 8 | 2 |
| DM38 35 | Computer System Security and Data Assurance | 8 | 2 |
| DM3A 35 | Internet: Configuration and Administration of Internet Services | 8 | 2 |
| DM3C 35 | Internet: Web Server Management | 8 | 2 |
| DM3J 35 | Internet: Web Technology and Security | 8 | 2 |
| DF9X 35 | Networking Technology | 8 | 2 |
| DF9Y 35 | Routing Technology | 8 | 2 |
| DG09 35 | Switching Technology | 8 | 2 |
| DG0A 35 | Internetworking Technology | 8 | 2 |
| DH30 35 | Software Development: Applications Development | 8 | 2 |
| DH32 35 | Software Development: Developing for the World Wide Web | 8 | 2 |
| DH34 35 | Software Development: Event Driven Programming | 8 | 2 |
| D76S 35 | Software Development: Fourth Generation Environment | 8 | 2 |
| DM32 35 | Software Development: Linked Data Structures | 8 | 2 |
| DM33 35 | Software Development: Object Oriented Collections | 8 | 2 |
| DH3C 35 | Software Development: Object Oriented Programming | 8 | 2 |
| DM3F 35 | Software Development: Rapid Applications Development & Prototyping | 8 | 2 |
| DH3D 35 | Software Development: Relational Database Systems | 8 | 2 |
| DH3E 35 | Software Development: Structured Programming | 8 | 2 |
| DM3H 35 | Systems Development: Object Oriented Design | 8 | 2 |
| D77F 35 | Systems Development: Structured Design Methods | 8 | 2 |
| Local option – unit(s) must be levelled by SQA – (Up to 4 credits) | | | 4 max |

A total of 30 credits must be achieved, comprising 240 SCOTCAT points, to gain an HND Software Development and this must incorporate at least 64 SCQF points at SCQF level 8.

**Total credit value of award: 30 credits of which a minimum of 10 credits must be gained at SCQF Level 8.**

**Mandatory units**

A total of **12** credits must be selected from Table SD1, 1 credit from Table SD2, a minimum of **4** credits from Table SD 3.

**Table 1 – All 12 units must be undertaken**

| Unit No | Title | Level | Credit |
|---|---|---|---|
| DH2T 34 | Computer Architecture 1 | 7 | 1 |
| DH33 34 | Computer Operating Systems 1 | 7 | 1 |
| DH35 34 | Computing: Planning | 7 | 1 |
| D75X 34 | Information Technology: Applications Software 1 | 7 | 1 |
| DH3F 34 | Systems Development: Introduction | 7 | 1 |
| DH21 34 | Working within a Project Team | 7 | 1 |
| DM30 35 | Project Management 1 | 8 | 1 |
| DM31 35 | Software Development: Array Data Structures | 8 | 1 |
| DN4N 35 | Computing: Group Award (Software Development) Graded Unit 2 | 8 | 2 |
| DM3D 35 | Professional Issues in Computing | 8 | 2 |

**Table 2 – Select a minimum of 1 credit**

| Unit No | Title | Level | Credit |
|---|---|---|---|
| DH3G 34 | Systems Development: Object Oriented Design (Introduction) | 7 | 1 |
| DH3H 34 | Systems Development: Structured Design Methods (Introduction) | 7 | 1 |

**Table 3 – Select a minimum of 4 credits**

| Unit No | Title | Level | Credit |
|---|---|---|---|
| DH32 35 | Software Development: Developing for the World Wide Web | 8 | 2 |
| DH34 35 | Software Development: Event Driven Programming | 8 | 2 |
| DH3C 35 | Software Development: Object Oriented Programming | 8 | 2 |
| DH3E 35 | Software Development: Structured Programming | 8 | 2 |

**Optional units**

**Table 4 – Additional units must be selected from the Table 2, Table 3 or Table 4.**

| Unit No | Title | Level | Credit |
|---|---|---|---|
| DG0K 33 | Hardware Concepts | 6 | 1 |
| DF9L 33 | Operating System Concepts | 6 | 1 |
| D77H 34 | Employment Experience 2 | 7 | 1 |
| DH37 34 | Information Technology: Information Systems and Services | 7 | 1 |
| DH39 34 | Internet: Introducing e-commerce | 7 | 1 |
| DH38 34 | Internet: Internet Client Services | 7 | 1 |
| D76E 34 | Mathematics for Computing 1 | 7 | 1 |
| DH3A 34 | Multi User Operating Systems | 7 | 1 |
| DH2X 34 | Providing Support to Users | 7 | 1 |

| Unit No | Title | Level | Credit |
|---|---|---|---|
| DH3J 34 | SQL: Introduction | 7 | 1 |
| DM34 34 | Supporting Users and Troubleshooting Desktop Applications | 7 | 1 |
| DF9M 34 | Client Operating Systems | 7 | 2.0 |
| DF9N 34 | Network Server Operating System | 7 | 2.0 |
| DH2Y 34 | Computer Hardware: Hardware Installation and Maintenance | 7 | 2 |
| DH31 34 | Computer Networks: Building Local Area Networks | 7 | 2 |
| DH2R 34 | Multimedia: Developing Multimedia Applications | 7 | 2 |
| DM35 34 | Supporting Users and Troubleshooting a Desktop Operating System | 7 | 2 |
| DF9R 35 | Network Infrastructure 1: Implementation and Management | 8 | 2 |
| DH2V 35 | Computer Architecture 2 | 8 | 1 |
| DH2W 35 | Computer Hardware: Building a Network PC | 8 | 1 |
| D7JW 35 | Computer Networks: Internet Network Connectivity | 8 | 1 |
| DF9X 35 | Networking Technology | 8 | 2 |
| DF9Y 35 | Routing Technology | 8 | 2 |
| DG09 35 | Switching Technology | 8 | 2 |
| DG0A 35 | Internetworking Technology | 8 | 2 |
| DM2X 35 | Computer Operating Systems 2 | 8 | 1 |
| D7JV 35 | Enhancing Network Security and Configuring Remote Access Methods | 8 | 1 |
| D7CY 35 | Information Technology: Applications Software 2 | 8 | 1 |
| DM39 35 | Internet: Client Side Web Scripting | 8 | 1 |
| D76F 35 | Mathematics for Computing 2 | 8 | 1 |
| DM2Y 35 | Project Management 2 | 8 | 1 |
| DM3E 35 | Software Development: Advanced Programming | 8 | 1 |
| DM3G 35 | Software Development: Assembly Language and Interface Programming | 8 | 1 |
| DM2W 35 | Wireless and Mobile Technology | 8 | 1 |
| DM37 35 | Computer Hardware: Desktop Computer Troubleshooting | 8 | 2 |
| D75S 35 | Computer Networks: Administering Network Systems | 8 | 2 |
| D75V 35 | Computer Networks: Network Technology and Data Communications | 8 | 2 |
| DM38 35 | Computer System Security and Data Assurance | 8 | 2 |
| DM3A 35 | Internet: Configuration and Administration of Internet Services | 8 | 2 |
| DM3C 35 | Internet: Web Server Management | 8 | 2 |
| DM3J 35 | Internet: Web Technology and Security | 8 | 2 |
| DM3F 35 | Software Development: Rapid Application Development and Prototyping | 8 | 2 |
| DM3H 35 | Systems Development: Object Oriented Design | 8 | 2 |
| D77F 35 | Systems Development: Structured Design Methods | 8 | 2 |
| DH30 35 | Software Development: Applications Development | 8 | 2 |
| D76S 35 | Software Development: Fourth Generation Environment | 8 | 2 |
| DM32 35 | Software Development: Linked Data Structures | 8 | 2 |
| DM33 35 | Software Development: Object Oriented Collections | 8 | 2 |
| DH3D 35 | Software Development: Relational Database Systems | 8 | 2 |
| Local options – unit(s) must be levelled by SQA – (up to 4 credits) | | | 4 (max) |

## SECTION B

### CREDIT TRANSFER BETWEEN 1995 AND 2001 UNITS

Full credit transfer exists between the following units. **Please note that in some cases, credit transfer is one way only.**

| *2001 units* | | *1995 units* | | |
|---|---|---|---|---|
| **New number** | **Title (credit value)** | **Original number** | **Revised Number** | **Title (credit value)** |
| D101 13 | Artificial Intelligence (1) | 8412455 | A6AF 04 | Artificial Intelligence (2)[5] |
| D75R 34 | Computer Hardware: Installation and Maintenance (2) | 8412485 | A6AK 04 | Hardware Installation and Maintenance (2) |
| D75S 35 | Computer Networks: Administering Network Systems (2) | 8412535 | A6AS 04 | **Either** Multi User and Network System Administration (3) [5] |
| | | - | D3BX 04 | **Or** Multi User and Network System Administration (Microsoft) (3)[5] |
| D75V 35 | Computer Networks: Network Technology and Data Communications (2) | 8412565 | A6AW 04 | **Either** Network Technology (1) |
| | | - | D3BY 04 | **Or** Network Technology (Microsoft) (1) |
| | | 8560085 | A6AJ 04 | **And** Data Communications (1) |
| D77A 34 | Computer Operating Systems (2) | 8412605 | A6B3 04 | **Either** Stand Alone Computer System Support (2) |
| | | - | D3C0 04 | **Or** Stand Alone Computer System Support (Microsoft) (2) |
| D75W 34 | Multimedia: Developing Multimedia Applications (2) | 8412555 | A6AV 04 | Multimedia Technology (2) |
| D75Y 34 | Information Technology: Information Systems and Services (1) | 8560095 | A6AL 04 | Information Systems and Services (1) |
| D76B 34 | Internet: Internet Client Services ( 1) | 8560257 | D4FA 04 | Supporting Internet Client Services (2)[5] |
| D76E 34 | Mathematics for Computing: 1 (1) | 7481724 | A5P0 04 | Mathematics for Computing (1) |
| D76G 34 | Multi User Operating Systems (1) | 8412545 | A6AT 04 | Multi User Operating System (1) |
| D76J 35 | Project Management (1) | 6412255 | A6AX 04 | Project Management (1) |
| D76K 34 | Providing Support to Users (2) | 8412575 | A6AY 04 | Providing Support to Users (2) |
| D76L 35 | Software Development: Abstract Data Structures (3) | 8520995 | A6B1 04 | Software Engineering: Abstract Data Structures (3) |
| D76M 35 | Software Development: Advanced Programming (1) | 8412435 | A6AD 04 | Advanced Programming (1) |
| D76N 34 | Software Development: Applications Development (2) | 8412445 | A6AE 04 | Applications Development (2) |

[5] 1995 to 2001 only.

| *2001 units* | | *1995 units* | | |
|---|---|---|---|---|
| **New number** | **Title (credit value)** | **Original number** | **Revised Number** | **Title (credit value)** |
| D76R 35 | Software Development: Event Driven Programming (2) | 8412625 | A6B5 04 | Software Development: Event Driven Language (2) |
| D76S 35 | Software Development: Fourth Generation Environment (2) | 8412645 | A6B7 04 | Systems Development: Fourth Generation Environment (2) |
| D76V 35 | Software Development: Object Oriented Programming (2) | 8412595 | A6B2 04 | Software Development: An Object Oriented Approach to Programming (2) |
| D76W 34 | Software Development: Program Planning (1) | 8412585 | A6B0 04 | Software Development Life Cycle (1) |
| D76X 35 | Software Development: Procedural Programming (2) | 8412635 | A6B6 04 | Software Development – Procedural Language (2) |
| D77D 34 | Systems Development: Introduction (2) | 8412615 | A6B4 04 | Systems Development – Introduction (2) |
| D77F 35 | Systems Development: Structured Design Methods (2) | 8521005 | A6B8 04 | Software Engineering: Structured Systems Analysis and Design (3)[5] |

The following units are equivalent in terms of vocational content. However, **credit transfer does not exist** since the 2001 units carry specific core skills that the 1995 units do not. Centres therefore require to produce evidence of the missing core skills before credit transfer may be awarded (this may be possession of dedicated core skills units).

| *2001 units* | | *1995 units* | |
|---|---|---|---|
| **Unit Number** | ***TITLE*** | **Unit Number** | ***TITLE*** |
| D77G 34 | Communication: Practical Skills | AOX9 04<br>A2HL | Communication: Selecting and Presenting Complex Information<br>Communication 1: Using Communication Media for Vocational Purposes |
| D75P 34<br>D76F 35 | Computer Architecture<br>Mathematics for Computing 2 | A6AG 04<br>A5PO 04 | Computer Architecture<br>Mathematics for Computing |
| D75X 34 | Information Technology: Applications Software 1 | A6AM 04<br>A6AN 04 | IT Applications Software 1<br>IT Applications Software 2 |

## SECTION C

**CREDIT TRANSFER BETWEEN 2001 AND 2004/5 UNITS -** Full (two way) credit transfer should be awarded unless otherwise indicated.

| 2001 FRAMEWORK | | 2004 FRAMEWORK | |
|---|---|---|---|
| **Unit No.** | **Unit title** | **Unit No.** | **Unit title** |
| D77G 34 | Communication: Practical Skills* | DH21 34 | Working within a Project Team* |
| D75P 34 | Computer Architecture | DH2T 34<br>DH2V 35 | Computer Architecture 1<br>Computer Architecture 2 |
| D75R 34 | Computer Hardware: Installation and Maintenance | DH2Y 34 | Computer Hardware: Hardware Installation and Maintenance |
| D75T 34 | Computer Networks: Building LANs* | DH31 35 | Computer Networks: Building LANs* |
| D77K 34 | Computing: Integrative Assessment 2 | DH36 34 | Computing: Group Award Graded Unit 1 |
| D77A 34 | Computer Operating Systems | DH33 34<br>DM2X 35 | Computer Operating Systems 1<br>Computer Operating Systems 2 |
| D75Y 34 | Information Technology: Information Systems & Services | DH37 34 | Information Technology: Information Systems & Services |
| D75X 34 | Information Technology: Applications Software 1* | D75X 34 | Information Technology: Applications Software 1* |
| D76B 34 | Internet: Internet Client Services | DH38 34 | Internet: Internet Client Services |
| D76A 34 | Internet: Introducing e-Commerce | DH39 34 | Internet: Introducing e-Commerce |
| D5V4 34 | Introduction to SQL | DH3J 34 | SQL: Introduction |
| A5P0 35 | Mathematics for Computing* | D76F 35 | Mathematics for Computing 2* |
| D75W 34 | Multimedia: Developing Multimedia Applications * | DH2R 34 | Multimedia: Developing Multimedia Applications * |
| D76G 34 | Multi User Operating Systems | DH3A 34 | Multi User Operating Systems |
| D76K 34 | Providing Support to Users | DH2X 34 | Providing Support to Users |
| D76P 35 | Software Development: Developing for the World Wide Web* | DH32 35 | Software Development: Developing for the World Wide Web* |
| D76R 35 | Software Development: Event Driven Programming | DH34 35 | Software Development: Event Driven Programming |
| D76V 35 | Software Development: Object Oriented Programming | DH3C 35 | Software Development: Object Oriented Programming |
| D76X 35 | Software Development: Procedural Programming | DH3E 35 | Software Development: Structured Programming |
| D76W 34 | Software Development: Program Planning | DH35 34 | Computing: Planning |
| D77D 34 | Systems Development: Introduction | DH3F 34<br>DH3H 34 | Systems Development: Introduction **and**<br>Systems Development: Structured Design Methods (Introduction) |
| D77C 35 | Systems Development: Relational Database Systems | DH3D 35 | Software Development: Relational Database Systems |

*These units are equivalent in terms of vocational competence but carry different core skills. **Credit transfer may only be awarded where there is additional evidence to demonstrate that candidates possess the required core skills (see appropriate unit specifications).**

## APPENDIX 4 : HNC COMPUTING – SUGGESTED PATHWAYS

| HNC Computing | | | Credit Rating | SCQF | Technical or Networking Support | Software Development | Internet | Information Systems | Multimedia or e-commerce |
|---|---|---|---|---|---|---|---|---|---|
| 1 | DH2T 34 | Computer Architecture 1 | 1 | 7 | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) |
| 2 | D75X 34 | Information Technology: Applications Software 1 | 1 | 7 | ✔ (M) * | ✔ (M) * | ✔ (M) * | ✔ (M) * | ✔ (M) * |
| 3 | DH35 34 | Computing: Planning | 1 | 7 | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) |
| 4 | DH33 34 | Computer Operating Systems 1 | 1 | 7 | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) |
| 5 | DH21 34 | Working within a Project Team | 1 | 7 | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) |
| 6 | DH36 34 | HNC Computing Graded Unit – Examination | 1 | 7 | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) | ✔ (M) |
| | | | | | | | | | |
| 7 | DH34 35 | Software Development: Event Driven Programming | 2 | 8 | | ✔ (O) | | | |
| 8 | DH3C 35 | Software Development: Object Oriented Programming | 2 | 8 | | ✔ (O) | | | |
| 9 | DH3E 35 | Software Development: Structured Programming | 2 | 8 | | ✔ (O) | | | |
| 10 | DH32 35 | Software Development: Developing for the WWW | 2 | 8 | | ✔ (O) | ✔ (O) | | ✔ (O) |
| 11 | DH30 35 | Software Development: Applications Development | 2 | 8 | | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 12 | DH2Y 34 | Computer Hardware: Hardware Installation & Maintenance | 2 | 7 | ✔ (O) | | | | |
| 13 | DH2W 35 | Computer Hardware: Building a Network PC | 1 | 8 | ✔ (O) | | | | |
| 14 | DH2V 35 | Computer Architecture 2 | 1 | 8 | ✔ (O) | | | | |
| 15 | D75T 34 | Computer Networks: Building Local Area Networks | 2 | 7 | ✔ (O) | | | | |
| 16 | D75S 35 | Computer Networks: Administering Network Systems | 2 | 8 | ✔ (O) | | | ✔ (O) | |
| 17 | D75V 35 | Computer Networks: Network Technology and Data Communications | 2 | 8 | ✔ (O) | | | | |
| 18 | DH2R 34 | Multimedia: Developing Multimedia Applications | 2 | 7 | | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 19 | DH37 34 | Information Technology: Information Systems and Services | 1 | 7 | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 20 | DH38 34 | Internet: Internet Client Services | 1 | 7 | | | ✔ (O) | ✔ (O) | ✔ (O) |
| 24 | DH39 34 | Internet: Introducing e-Commerce | 1 | 7 | | | ✔ (O) | ✔ (O) | ✔ (O) |

| HNC Computing | | | Credit Rating | SCQF | Technical Support or Networking | Software Development | Internet | Information Systems | Multimedia e-commerce |
|---|---|---|---|---|---|---|---|---|---|
| 25 | D7CY 35 | Information Technology: Applications Software 2 | 1 | 8 | ✔ (O) * | ✔ (O) * | ✔ (O) * | ✔ (O) * | ✔ (O) * |
| 26 | D76E 34 | Mathematics for Computing 1 | 1 | 7 | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 28 | D76F 35 | Mathematics for Computing 2 | 1 | 8 | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 29 | DH3A 34 | Multi User Operating Systems | 1 | 7 | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 30 | DH2X 34 | Providing Support to Users | 1 | 7 | ✔ (O) | | | | |
| 27 | D76S 35 | Software Development: Fourth Generation Environment | 2 | 8 | | | ✔ (O) | | ✔ (O) |
| 28 | DH3D 35 | Software Development: Relational Database Systems | 2 | 8 | | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 29 | D77H 34 | Employment Experience 2 | 1 | 7 | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 30 | DH3J 34 | SQL: Introduction | 1 | 7 | | ✔ (O) | ✔ (O) | ✔ (O) | ✔ (O) |
| 31 | DH3F 34 | Systems Development: Introduction | 1 | 7 | | ✔ (O) | | ✔ (O) | ✔ (O) |
| 32 | DH3H34 | Systems Development: Structured Design Methods (Introduction) | 1 | 7 | | ✔ (O) | | ✔ (O) | |
| 33 | DH3G 34 | Systems Development: Object Oriented Design (Introduction) | 1 | 7 | | ✔ (O) | | ✔ (O) | |
| 34 | Local Option 1 (**must be levelled**) | | | | | | | | |
| 35 | Local Option 2 (**must be levelled**) | | | | | | | | |
| | | | | | | | | | |

- Either item 32 **or** 33 can be chosen only if item 31 has been studied
- Items 32 and 33 **cannot** be studied together in the HNC Computing
- These items (marked with '*') make up the PDA in Office Applications (Microsoft Office)