Higher National Group Award Graded Unit Specification

General Information for Centres

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

Group Award Graded Unit Title: Computer Networking Graded Unit

Group Award Graded Unit Code: DG0J 34

Type of Group Award Graded Unit: Project

Assessment Instrument: Practical Assignment

Credit value: 1 HN Credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

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

Purpose: This group award Graded Unit is designed to provide evidence that the candidate has achieved the following principal aims of the HNC Computer Networking:

- To prepare students for employment in a networking-related post at technician level such as a technical support position or help-desk technician.

- To develop a range of contemporary vocational skills (i.e. technical computing skills) relating to the use and support of networked computer systems appropriate to employment at technician (or equivalent) level.

- To prepare students for progression to further study in Computer Networking or a related discipline at HND or second-year degree level.

Recommended Prior Knowledge and Skills: It is recommended that the candidate should already possess the core skills of Problem Solving and Working with Others at Intermediate 2 level and should have previous experience of task management and group work and be aware of how effective groups function. It is also recommended that the candidate should have completed or be in the process of completing the following Units relating to the above specific aims prior to undertaking this group award Graded Unit:

- DG0K 33   Hardware Concepts
- DF9L 33   Operating System Concepts
- DF9M 34   Client Operating System
- DF9N 34   Network Server Operating System

General Information for Centres (cont)

Core Skills: The core skills of Problem Solving at Higher and Working with Others at Higher are embedded in this Graded Unit specification. There may be opportunities to enhance other core skills such as Numeracy and Communication in this Graded Unit, although there is no automatic certification of these core skills or core skills components.

Assessment: This group award Graded Unit will be assessed by the use of a practical assignment. The "fleshed-out" practical assignment should provide the candidate with the opportunity to produce evidence that demonstrates she/he has met the aims of the group award that this group award Graded Unit covers.

An exemplar instrument of assessment and marking guidelines have been produced to provide examples of the kind of evidence required to demonstrate achievement of the aims of the group award covered by this Graded Unit and to indicate the national standard of achievement required at SCQF level 7.

Administrative Information

Graded Unit Code: DG0J 34

Graded Unit Title: Computer Networking Graded Unit

Date of publication: May 2004

Source: SQA

Special Needs: This group award Graded Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative assessment arrangements. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (December 2001, AA0645/3).

Higher National Group Award Graded Unit Specification: Instructions for designing the assessment task and assessing candidates

Group Award Graded Unit Title: HNC Computer Networking Graded Unit

Conditions of Assessment

The candidate should be given a date for completion of the practical assignment. However, the instructions for the assessment task should be distributed to allow the candidate sufficient time to assimilate the details and carry out the assessment task. During the time between the distribution of the assessment task instructions and the completion date, assessors may answer questions, provide clarification, guidance and reasonable assistance. The assessment task should be marked as soon as possible after the completion date. The final grading given should reflect the quality of the candidate's evidence at the time of the completion date. Reassessment of this group award Graded Unit should be based on a significantly different assessment task.

At this level, candidates should work independently. It is up to Centres to take reasonable steps to ensure that the project is the work of the candidate. For example, Centres may wish to informally question candidates at various stages on their knowledge and understanding of the project on which they have embarked. Centres should ensure that where research etc, is carried out in other establishments or under the supervision of others that the candidate does not receive undue assistance.

Instructions for designing the assessment task

The assessment task is a project. The project undertaken by the candidate must be a complex task which involves:

♦ variables which are complex or unfamiliar
♦ relationships which need to be clarified
♦ a context which may be familiar or unfamiliar to the candidate

The assessment task must require the candidate to:

♦ analyse the task and justify their proposed course of action for undertaking the project
♦ plan and organise work and carry it though to completion
♦ create and implement the plan in co-operation with others
♦ reflect on what has been done and draw conclusions for the future
♦ produce evidence of meeting the aims which this group award Graded Unit has been designed to cover

The assessment should be in the form of a practical assignment. This project should be undertaken by a small group. Roles and responsibilities within the group require to be shared and co-operative working practices need to be evidenced. The project will involve the design of a small computer network, supporting at least 10 users divided into 3 groups with significantly different requirements.

Candidates must select the appropriate hardware and software components of the network, including all client and server software and all relevant servers, workstations, cabling and switching and printing devices. They must also design a relevant user and group structure to meet the specified user and security requirements.

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

Guidance on grading candidates

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

Grade A	Grade C
Is a seamless, coherent piece of work which:	Is a co-ordinated piece of work which:
• has sufficient evidence for the three essential phases of the project, is produced to a high standard, and is quite clearly inter-related	• has sufficient evidence of the three essential phases of the project and is produced to an adequate standard
• demonstrates an accurate and insightful interpretation of the project brief	• demonstrates an acceptable interpretation of the project brief
• is highly focused and relevant to the tasks associated with the project brief	• is focused and relevant to the tasks associated with the project brief
• is clear and well structured throughout and language used is of a high standard in terms of level, accuracy and technical content	• is satisfactorily structured and language used is adequate in terms of level, accuracy and technical content
• effectively consolidates and integrates required knowledge and skills	• consolidates and integrates knowledge and skills but this may lack some continuity and consistency
• incorporates a robust and efficient network design which fully meets the specified requirements.	• incorporates a network design which may have significant faults, but still meets the specified requirements.
• demonstrates an optimum selection of hardware and software components to construct an efficient and cost-effective network.	• demonstrates an usable selection of hardware and software components to construct a workable network.
• incorporates an efficient and effective group structure which fully meets the specified requirements.	• incorporates a group structure which may have significant faults but is capable of meeting the specified requirements.

Evidence requirements

Although this project is to be carried out in a small group, each candidate is responsible for recording their own work and undertaking their personal responsibilities as negotiated in the group. Each candidate must produce their own report.

The project consists of three stages: planning; developing; and evaluating. The following table specifies the minimum evidence required to pass each stage.

Note: The candidate must achieve all of the minimum evidence specified below for each stage of the project in order to pass the group award Graded Unit.

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

Project Stage	Minimum Evidence Requirements
Stage 1 — Planning	**Evidence of Problem Solving:** Evidence of analysing what is involved in the project, i.e. identification of the factors influencing the project and how they relate to one another Evidence of developing an approach to deal with the project, i.e. the candidate may select a new approach to the project or modify an existing approach Justification for selecting this approach, eg resources and time available, comparison with other possible approaches Evidence of developing a plan to carry out the project based on the analysis undertaken Identification of the resources required to carry out the project, eg sources of information, procedures to be followed, people, equipment and other physical resources; resources should be wide ranging and some should be unfamiliar to the candidate Evidence of obtaining these resources – the candidate may need to do some searching **Evidence of Working with Others:** Identification of the possible components of the task and the selection of the essential components in negotiation with others Evidence of negotiating and agreeing the nature and scope of the goal taking account of the size and expertise of the team Evidence of collaboration on procedures to undertake the task Evidence of negotiation and agreement on task responsibilities within the team, taking account of own and other strengths Evidence of negotiation of the roles and rules for the management of the team Evidence of negotiation of working methods, taking account of available resources

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

Project Stage	Minimum Evidence Requirements
Stage 1 — Planning (cont)	Evidence of co-operative working by: - anticipating the needs of others - keeping others informed of progress and difficulties, and implications of these - contributing to group decisions *The candidate must achieve all of the minimum evidence specified above in order to pass the Planning stage.*
Stage 2 — Developing	Evidence of the candidate carrying out the project. This will involve the implementation of the plan created in stage 1, reviewing or adjusting the plan if required. This project should be undertaken by a small group and will involve the design of a small computer network, supporting at least 10 users divided into 3 groups with significantly different requirements. Candidates must select the appropriate hardware and software components of the network, including all client and server software and all relevant servers, workstations, cabling and switching and printing devices. They must also design a relevant user and group structure to meet the specified user and security requirements. Evidence arising from this project should include **From Hardware Concepts, Operating System Concepts, Client Operating System, Network Server Operating System:** A report of around 10 pages documenting the underpinning processes: - installation and configuration of network operating system software; - installation and configuration of network nodes - installation and configuration of shared printing devices - maintenance of users, groups and security on a network system **Evidence of Working with Others** Evidence of co-operative working by: - anticipating the needs of others - keeping others informed of progress and difficulties, and implications of these - contributing to group decisions *The candidate must achieve all of the minimum evidence specified above in order to pass the Developing stage.*

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

Project Stage	Minimum Evidence Requirements
Stage 3 — Evaluating	An evaluation of the effectiveness of the approach/strategy taken which includes all stages of the activity, i.e. analysis of the activity, the planning and organisation of the activity and the outcome of the activity. The evaluation should include: • identification of the criteria on which to base the evaluation • identification and gathering of appropriate evidence to support the evaluation, e.g. use of qualitative/quantitative methods, comparisons with other systems/products, impact studies, product testing or market research • evaluation of the effectiveness of the problem solving activity, explaining the relevance of the evidence - the evaluation should be related to the original analysis of the project • reference to any modifications to the approach during the course of the activity or to alternative approaches considered • conclusions as to how the process of carrying out the project could be improved, with evidence to support the conclusions drawn • recommendations for the future which are relevant to the problem and justify the recommendations **Attainment of Aims** To prepare candidates for employment in a networking-related post at technician level such as a technical support position or help-desk technician. To develop a range of contemporary vocational skills (i.e. technical computing skills) relating to the use and support of networked computer systems appropriate to employment at technician (or equivalent) level. To prepare candidates for progression to further study in Computer Networking or a related discipline at HND or second-year degree level. Candidates will have learned and demonstrated skills in: • installation and configuration of network operating system software; • installation and configuration of network nodes • installation and configuration of shared printing devices • maintenance of users, groups and security on a network system

Project Stage	Minimum Evidence Requirements
Stage 3 — Evaluating (cont)	**Evidence of Problem Solving:** The evaluation should include: • identification of the criteria on which to base the evaluation • identification and gathering of appropriate evidence, eg use of qualitative/quantitative methods, comparisons with other systems/products, impact studies, product testing or market research • evaluation of the effectiveness of the problem solving activity, explaining the relevance of the evidence - the evaluation should be related to the original analysis of the project • reference to any modifications to the approach during the course of the activity or to alternative approaches considered • conclusions as to how the process of carrying out the project could be improved, with evidence to support the conclusions drawn • recommendations for the future which are relevant to the problem and justify the recommendations **Evidence of Working with Others** • contribution to the task analysis and planning • effectiveness of the contribution to the negotiation of goals, roles and responsibilities • evaluation of strengths and weaknesses of won contribution to the team activity • justification of this evaluation by referring to information gathered • conclusions about how effectively the team as a whole collaborated **Attainment of Aims** To prepare candidates for employment in a networking-related post at technician level such as a technical support position or help-desk technician. To develop a range of contemporary vocational skills (i.e. technical computing skills) relating to the use and support of networked computer systems appropriate to employment at technician (or equivalent) level. To prepare candidates for progression to further study in Computer Networking or a related discipline at HND or second-year degree level. Candidates will have demonstrated the skills of working in a group to design a small computer network. *The candidate must achieve all of the minimum evidence specified above in order to pass the Evaluating stage.*