

**COMHAIRLE Náisiúnta na
gCáilíochtaí Gairmoideachais**

**NATIONAL COUNCIL FOR
VOCATIONAL AWARDS**



Consultative Draft Module Descriptor

Networks

Level 3 C30143

September 2001

Summary of Contents

Introduction	Describes how the module functions as part of the national vocational certificate framework.
Module Title	Indicates the module content. This title appears on the learner's certificate. It can be used to download the module from the website www.ncva.ie .
Module Code	An individual code is assigned to each module; a letter at the beginning denotes a vocational or general studies area under which the module is grouped and the first digit denotes its level within the national vocational certificate framework.
Level	Indicates where the module is placed in the national vocational certificate framework, from Foundation to Level 3.
Credit Value	Denotes the amount of credit that a learner accumulates on achievement of the module.
Purpose	Describes in summary what the learner will achieve on successfully completing the module and in what learning and vocational contexts the module has been developed. Where relevant, it lists what certification will be awarded by other certification agencies.
Preferred Entry Level	Recommends the level of previous achievement or experience of the learner.
Special Requirements	Usually 'none' but in some cases detail is provided here of specific learner or course provider requirements. There may also be reference to the minimum safety or skill requirements that learners must achieve prior to assessment.
General Aims	Describe in 3-5 statements the broad skills and knowledge learners will have achieved on successful completion of the module.
Units	Structure the learning outcomes; there may be no units.
Specific Learning Outcomes	Describe in specific terms the knowledge and skills that learners will have achieved on successful completion of the module.
Portfolio of Assessment	Provides details on how the learning outcomes are to be assessed.
Grading	Provides details of the grading system used.
Individual Candidate Marking Sheets	List the assessment criteria for each assessment technique and the marking system.
Module Results Summary Sheet	Records the marks for each candidate in each assessment technique and in total. It is an important record for centres of their candidate's achievements.
Appendices	Can include approval forms for national governing bodies.
Glossary of Assessment Techniques	Explains the types of assessment techniques used to assess standards.
Assessment Principles	Describes the assessment principles that underpin the NCVA approach to assessment.

Introduction

A module is a statement of the standards to be achieved to gain an NCVA award. Candidates are assessed to establish whether they have achieved the required standards. Credit is awarded for each module successfully completed.

The standards in a module are expressed principally in terms of specific learning outcomes, i.e. what the learner will be able to do on successful completion of the module. The other elements of the module - the purpose, general aims, assessment details and assessment criteria - combine with the learning outcomes to state the standards in a holistic way.

While the NCVA is responsible for setting the standards for certification in partnership with course providers and industry, it is the course providers who are responsible for the design of the learning programmes. The duration, content and delivery of learning programmes should be appropriate to the learners' needs and interests, and should enable the learners to reach the standard as described in the modules. Modules may be delivered alone or integrated with other modules.

The development of learners' **core skills** is a key objective of vocational education and training. The opportunity to develop these skills may arise through a single module or a range of modules. The core skills include:

- taking initiative
- taking responsibility for one's own learning and progress
- problem solving
- applying theoretical knowledge in practical contexts
- being numerate and literate
- having information and communication technology skills
- sourcing and organising information effectively
- listening effectively
- communicating orally and in writing
- working effectively in group situations
- understanding health and safety issues
- reflecting on and evaluating quality of own learning and achievement.

Course providers are encouraged to design programmes which enable learners to develop core skills.

1	Module Title	Networks
2	Module Code	C30143
3	Level	3
4	Credit Value	1 credit
5	Purpose	<p>This module is a statement of the standards to be achieved to gain an NCVA credit in Networks at Level 3. It is mandatory module for the National Vocational Certificate Level 3 in Networks and Software Systems</p> <p>The module is designed to provide the learner with a knowledge and understanding of networks, allowing them to set up and manage a network system of computers.</p>
6	Preferred Entry Level	National Vocational Certificate Level 2, or equivalent qualifications and/or relevant life and work experiences.
7	Special Requirements	The learner should have successfully completed the NCVA module Computer Architecture and Systems (C20012) or its equivalent.
8	General Aims	<p><i>Learners who successfully complete this module will:</i></p> <p>8.1 be familiar with the different types of networks and internetworks</p> <p>8.2 develop an awareness of the different types of network topologies</p>

- 8.3 appreciate the need for different types of protocols
- 8.4 acquire the skills necessary to set up a server/client network
- 8.5 be familiar with available data communications services at both national and international level.

9 Units **The specific learning outcomes are grouped into 4 units.**

- Unit 1** **Network Types**
- Unit 2** **Network Topology**
- Unit 3** **Protocols**
- Unit 4** **Network Administration**

10 Specific Learning Outcomes

Unit 1 Network types

Learners should be able to:

- 10.1.1 distinguish between LAN, WAN and MAN.
- 10.1.2 describe how an internetwork works.
- 10.1.3 outline the historical development of the Connected Internetwork i.e. the INTERNET.
- 10.1.4 outline the role of the INTERNET
- 10.1.5 describe how the INTERNET may be accessed.

Unit 2 Network Topology

Learners should be able to:

- 10.2.1 list the different types of topologies

- 10.2.2 explain the differences between different types of topologies
- 10.2.3 connect different types of topologies
- 10.2.4 describe types of wiring usually used in a network eg
two pair, twisted pair, coaxial, optical fibre
- 10.2.5 internetwork LANs with repeaters, bridges, switches, routers and
gateways
- 10.2.6 explain the role of a hubs/repeaters/switches
- 10.2.7 distinguish between the type and the role of different bridges eg
adaptive, learning, remote, transparent)
- 10.2.8 explain the role of a
- router
 - gateway
- 10.2.9 summarise the function of a firewall

Unit 3

Protocols

Learners should be able to:

- 10.3.1 explain in detail the 7 layers of the OSI protocol suite
- 10.3.2 explain the following protocols
- IPX/SPX
 - NETBEUI
 - TCP/IP
- 10.3.3 describe where and why IPX/SPX, NETBEUI, TCP/IP are used
in different networks
- 10.3.4 explain the role of packet switching
- 10.3.5 explain how a packet is assembled

10.3.6 explain how the X.25 interface is used in a packet switching network

10.3.7 explain the function of a PAD

Unit 4 Network Administration

Learners should be able to:

10.4.1 explain the role of a network supervisor

10.4.2 describe how to set up a server eg Novell, NT, Linux

10.4.3 set up users on a network

10.4.4 set up permissions for users

10.4.5 set up various clients to a server

10.4.6 set up applications on clients in a network environment

10.4.7 set up an e-mail client

10.4.8 use e-mail in a LAN

10.4.9 create login scripts for users

10.4.10 describe the role of permissions in relation to files and drives.

11 Portfolio of Assessment

Please refer to the glossary of assessment techniques and the note on assessment principles at the end of this module descriptor.

All assessment is carried out in accordance with NCVA regulations.

Assessment is devised by the internal assessor, with external moderation by the NCVA.

Summary	Examination (Theory- Based)	40%
	Assignment	30%
	Skills Demonstration	30%

11.1 Examination

The internal assessor will devise a theory-based examination that assesses the candidate's ability to recall and apply theory and understanding, requiring responses to a range of structured questions. These questions may be answered in different media such as in writing or orally.

The examination will be based on a range of specific learning outcomes from all units and will be 2 hours in duration.

The format of the examination will be as follows:

5 structured questions
Candidates are required to answer 4 (10 marks each).

11.2 Assignment

The internal assessor will devise a brief that require candidates to produce evidence that demonstrates an understanding and application of a wide range of specific learning outcomes.

Candidates will carry out an investigation of a topic that demonstrates an understanding and application of concepts in Networking.

Candidates will use appropriate research methods, analyse the findings and present conclusions and recommendations

The assignment may be presented using a variety of media, including written, oral, graphic, audio, and visual or any combination of these. Any audio or video evidence must be provided on tape

11.3 Skills Demonstration

In one or more skills demonstrations, candidates will be observed carrying out 5 practical tasks from the following:

- connecting different types of topologies
- internetworking LANs with repeaters, bridges, switches, routers and gateways
- setting up users on a network
- setting up permissions for users
- setting up various clients to a server
- setting up applications on clients in a network environment
- setting up an e-mail client
- using e-mail in a LAN
- creating login scripts for users

Candidates will demonstrate adherence to procedures including


- assembly and handling equipment/materials
- implementation of processes/guidelines and instructions
- safe working practices

Candidates will submit supporting evidence for the practical tasks completed

The skills can be assessed at any time throughout the learning process.

12 Grading

Pass	50 - 64%
Merit	65 - 79%
Distinction	80 - 100%

Individual Candidate Marking Sheet 2		Networks C30143 Assignment 30% Skills Demonstration 30%
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Candidate Name: _____ NCVA Candidate No.: _____

Centre: _____ Roll No.: _____

Assessment Criteria	Maximum Mark	Candidate Mark
Assignment		
▪ appropriate methodology used in the investigation with careful observations and recording of relevant information	10	
▪ comprehensive interpretation and analysis of information	5	
▪ logical conclusions and recommendations	5	
▪ clear demonstration of understanding and application of concepts in Networking	10	
Sub-Total	30	
Skill Demonstration		
▪ effective adherence to procedures including health and safety	15	
▪ excellent technical and visual quality to finished work	15	
Sub-Total	30	
TOTAL MARKS	60	
<i>This mark should be transferred to the Module Results Summary Sheet</i>		

Internal Assessor's Signature: _____ **Date:** _____

External Examiner's Signature: _____ **Date:** _____

NCVA Module Results Summary Sheet

Module Title: Networks
Module Code: C30143

Assessment Marking Sheets
Maximum Marks per Marking Sheet

[illegible]

Signed:

Internal Assessor: _____ *Date:* _____

This sheet is for internal assessors to record the overall marks of individual candidates. It should be retained in the centre. The marks awarded should be transferred to the official NCVA Module Results Sheet issued to centres before the visit of the external examiner.

Grade*
D: 80 - 100%
M: 65 - 79%
P: 50 - 64%
U: 0 - 49%
W: candidates

Glossary of Assessment Techniques

Assignment *An exercise carried out in response to a brief with specific guidelines and usually of short duration.*

Each assignment is based on a brief provided by the internal assessor. The brief includes specific guidelines for candidates. The assignment is carried out over a period of time specified by the internal assessor.

Assignments may be specified as an oral presentation, case study, observations, or have a detailed title such as audition piece, health fitness plan or vocational area profile.

Collection of Work

A collection and/or selection of pieces of work produced by candidates over a period of time that demonstrates the mastery of skills.

Using guidelines provided by the internal assessor, candidates compile a collection of their own work. The collection of work demonstrates evidence of a range of specific learning outcomes or skills. The evidence may be produced in a range of conditions, such as in the learning environment, in a role play exercise, or in real-life/work situations.

This body of work may be self-generated rather than carried out in response to a specific assignment eg art work, engineering work etc

Examination

A means of assessing a candidate's ability to recall and apply skills, knowledge and understanding within a set period of time (time constrained) and under clearly specified conditions.

Examinations may be:

- practical, assessing the mastery of specified practical skills demonstrated in a set period of time under restricted conditions
- oral, testing ability to speak effectively in the vernacular or other languages
- interview-style, assessing learning through verbal questioning, on one-to-one/group basis
- aural, testing listening and interpretation skills
- theory-based, assessing the candidate's ability to recall and apply theory, requiring responses to a range of question types, such as objective, short answer, structured, essay. These questions may be answered in different media such as in writing, orally etc.

Learner Record

A self-reported record by an individual, in which he/she describes specific learning experiences, activities, responses, skills acquired.

Candidates compile a personal logbook/journal/diary/daily diary/record/laboratory notebook/sketch book.

The logbook/journal/diary/daily diary/record/laboratory notebook/sketch book should cover specified aspects of the learner's experience.

Project

A substantial individual or group response to a brief with guidelines, usually carried out over a period of time.

Projects may involve:

- research – requiring individual/group investigation of a topic
- process – eg design, performance, production of an artefact/event

Projects will be based on a brief provided by the internal assessor or negotiated by the candidate with the internal assessor. The brief will include broad guidelines for the candidate. The work will be carried out over a specified period of time.

Projects may be undertaken as a group or collaborative project, however the individual contribution of each candidate must be clearly identified.

The project will enable the candidate to demonstrate: (*some of these – about 2-4*)

- understanding and application of concepts in (specify area)
- use/selection of relevant research/survey techniques, sources of information, referencing, bibliography
- ability to analyse, evaluate, draw conclusions, make recommendations
- understanding of process/planning implementation and review skills/ planning and time management skills
- ability to implement/produce/make/construct/perform
- mastery of tools and techniques
- design/creativity/problem-solving/evaluation skills
- presentation/display skills
- team working/co-operation/participation skills.

Skills

Demonstration

Assessment of mastery of specified practical, organisational and/or interpersonal skills.

These skills are assessed at any time throughout the learning process by the internal assessor/another qualified person in the centre for whom the candidate undertakes relevant tasks.

The skills may be demonstrated in a range of conditions, such as in the learning environment, in a role-play exercise, or in a real-life/work situations.

The candidate may submit a written report/supporting documentation as part of the assessment.

Examples of skills: laboratory skills, computer skills, coaching skills, interpersonal skills.

NCVA Assessment Principles

- 1 Assessment is regarded as an integral part of the learning process.
- 2 All NCVA assessment is criterion referenced. Each assessment technique has **assessment criteria** which detail the range of marks to be awarded for specific standards of knowledge, skills and competence demonstrated by candidates.
- 3 The mode of assessment is generally local i.e. the assessment techniques are devised and implemented by internal assessors in centres.
- 4 Assessment techniques in NCVA modules are valid in that they test a range of appropriate learning outcomes.
- 5 The reliability of assessment techniques is facilitated by providing support for assessors.
- 6 Arising from an extensive consultation process, each NCVA module describes what is considered to be an optimum approach to assessment. When the necessary procedures are in place, it will be possible for assessors to use other forms of assessment, provided they are demonstrated to be valid and reliable.
- 7 To enable all learners to demonstrate that they have reached the required standard, candidate evidence may be submitted in written, oral, visual, multimedia or other format as appropriate to the learning outcomes.
- 8 Assessment of a number of modules may be integrated, provided the separate criteria for each module are met.
- 9 Group or team work may form part of the assessment of a module, provided each candidate's achievement is separately assessed.