Higher National Unit Specification

General information for centres

Unit title: Multimedia Computing: Multimedia Technology

Unit code: DF68 34

Unit purpose: This Unit is designed to introduce candidates to the hardware, software and delivery media used in industry to produce interactive applications. Candidates will develop knowledge of hardware technology, software categories, proprietary software applications, standard file formats, technology of distribution media and the processes involved in publishing to disk and web. This Unit should help candidates to contextualise the working of interactive computer development which will be useful in their study of subsequent multimedia units.

On completion of the Unit the candidate should be able to:

1. Describe the function of equipment used to create interactive applications.
2. Describe the software utilised in the development of interactive applications.
3. Describe methods for distribution of interactive applications.

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.

Recommended prior knowledge and skills: Access to this Unit will be at the discretion of the Centre. However, it is essential that the candidate have prior experience of using a computer system. This may be evidenced by the possession of relevant National Units, HN units or experience.

For core skills it would be beneficial if candidates had some information technology skills. This could be demonstrated by the achievement of the core skill Using Information Technology at Intermediate 2 or equivalent.

Core skills: There may also be opportunities to gather evidence towards other core skills in this Unit, although there is no automatic certification of these other core skills or core skills components.

General information for centres (cont)

Context for delivery: If this Unit is delivered as part of a group award, it is recommended that it should be taught and assessed within the context of the particular group to which is contributes.

Assessment: There are 3 Outcomes in this unit which will consist of 2 assessments. Outcome 1 requires candidates to produce short responses to written questions to test underpinning knowledge. Outcomes 2 and 3 are integrated and require candidates to produce a report. This report can be a word processed document or interactive presentation. The report for Outcomes 2 and 3 could be produced on an individual basis or as a result of a group case study where candidates are presented with an appropriate scenario. An observation of each candidate publishing a ready-made application must be carried out, to demonstrate each candidate's practical knowledge and skills.

This Unit may be delivered in such a way that the core skill *Using Information Technology* at Higher **may** be achieved.

For further information, please see page 10 of the Support Notes.

Higher National Unit specification: statement of standards

Unit title: Multimedia Computing: Multimedia Technology

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe the function of equipment used to create interactive applications.

Knowledge and/or skills

♦ Computer system requirements – development and playback systems
♦ Image capture
♦ Cameras
♦ Sound equipment
♦ Video Capture equipment
♦ Storage devices – internal/external
♦ Set up equipment and trouble-shoot basic problems

Evidence requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by describing the type of equipment required to produce interactive applications in a professional working environment.

Candidates will be able to:

♦ Describe the types of computer systems used by industry for developing interactive applications
♦ Describe the considerations taken when designing for different end playback systems.
♦ Identify the different hardware peripherals and understand the technology behind these
♦ Describe the purpose of the peripherals
♦ Set up equipment and trouble shoot basic problems — select devices, check connections.

This assessment will be in the form of 20 short response questions. Each of the knowledge and/or skills must be covered in the assessment and the questions allocated on an equal basis. The assessment must be carried out in a supervised environment, will be closed book and is to be completed in 1 hour. Candidates must answer 12 out of the 20 (60%) questions correctly in order to obtain a pass in this outcome.

Higher National Unit specification: statement of standards (cont)

Unit title: Multimedia Computing: Multimedia Technology

Candidates will also demonstrate their knowledge and/or skills by setting up some equipment and conducting basic trouble shooting.

Candidates should be able to set up equipment; connect to printers, scanners, cameras, capture cards, and trouble shoot basic problems. This should be evidenced using a classroom observation checklist. The candidate is not being assessed on their ability to use the various pieces of equipment.

Assessment guidelines

Candidates should gain a general knowledge of what type of equipment is required to produce multimedia applications in a professional working environment.

Outcome 2

Describe the software utilised in the development of interactive applications.

Knowledge and/or skills

♦ Authoring and Web Development software
♦ Graphics
♦ Sound editing software
♦ Video editing software
♦ Animation software
♦ File formats
♦ Database engines
♦ Operating systems
♦ File and system management

Evidence requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can describe the industry standard software packages used to create interactive applications. This should be demonstrated by the production of an appropriate report. (See evidence requirements in Outcome 3). File and system management should be evidenced throughout, where candidates must be able to organize and secure work.

Assessment guidelines

Assessment for Outcome 2 may be integrated with Outcome 3 — see guidelines for Outcome 3.

Higher National Unit specification: statement of standards (cont)

Unit title: Multimedia Computing: Multimedia Technology

Outcome 3

Describe methods for distribution of interactive applications.

Knowledge and/or skills

♦ Distribution formats
♦ Storage media
♦ Publishing files to appropriate media

Evidence requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by describing in a report the processes involved in finalizing interactive projects. For Outcome 3 the report must contain reference to at least the following elements:

♦ Common file types used for interactive applications,
♦ The different online and offline delivery mediums and their underlying technologies,
♦ The process for preparing applications for distribution and publishing applications.

The report must also cover all of the knowledge and/or skills elements of Outcome 2. The report must be in either word-processed format, or presented as an interactive linear presentation.

The candidate must demonstrate their knowledge and/or skills by publishing an application to CD and to the Web, under classroom observation.

♦ Presentation format — a minimum of 6 screens must be produced. This should be developed in a presentation package. The candidate's authoring/coding skills are not being assessed. Screens should be aesthetically pleasing with clear layout and appropriate use of graphics.
♦ At least 2 data types should be incorporated from: text, graphics, video, audio
♦ A research plan outlining sources and expected outcome, must be produced
♦ Electronic data sources must include less obvious sources eg newsgroups, forums.
♦ Securing and managing data must be evidenced through print outs of directories and ongoing classroom observation.

Assessment guidelines

It is recommended that Outcomes 2 and 3 are integrated into one assessment. In preparation for the report, candidates should have utilised a sample (or been exposed to demonstrations) of the software and publishing techniques

Administrative Information

Unit code: DF68 34

Unit title: Multimedia Computing: Multimedia Technology

Superclass category: CE

Date of publication: December 2003

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History of Changes:

Version	Description of change	Date
2	Statement added to 'Support Notes' to identify Outcome(s) that can be assessed using the SQA electronic assessment system.	15/05/06

Source: SQA

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

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

Higher National Unit specification: support notes

Unit title: Multimedia Computing: Multimedia Technology

This part of the Unit specification is offered as guidance.   The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

Throughout the Unit candidates should be involved in learning about the hardware and software required to produce a range of interactive projects and the components used to deliver them. This unit should form the basis for further learning of multimedia technology. This unit is regarded as the first in a series of 3 technology units available in the HNC/D Multimedia Computing: Web Development and HND Multimedia Computing, the other 2 units being Multimedia Computing: Internet Technology and Multimedia Computing: Web Technology, respectively.

Outcome 1

It is intended that Outcome 1 should deal with current hardware that is commonly used by industry and also with new developments in this area. At the time of writing examples of some new developments are surround sound audio cards (SPDIF), firewire video capture cards, DVD writers, DV cameras and Flash memory pens (sticks). It may be beneficial to cover the history of these hardware devices to help the candidate better understand the current technology.

Outcome 2

Outcome 2 is concerned with the software applications that are currently used by industry to produce interactive applications. This Outcome should help the candidate to identify the professional applications that they should encounter throughout the course, as opposed to offshoot applications. Candidates should also acknowledge new versions of applications that have been/are in the process of being released. Candidates should be exposed to a representative range of software in order to gain the knowledge and/or skills required.

At the time of writing some of the most recent versions of appropriate software applications are the MX suite of applications, Premiere 6.5 and Photoshop 7.

Outcome 3

Outcome 3 looks at the different methods of delivering interactive applications. At the time of writing, this is split into 2 distinct areas, 'offline' and 'online'. Candidates need to gain knowledge of the technologies involved in these media and an understanding of when an offline delivery medium (CDRom, DVD) is more appropriate than an online (website) platform and vice versa, for an interactive application. Candidates should learn about and

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

gain the requisite publishing skills covered in this outcome. Candidates should be given class exercises to practice these skills, prior to assessment

Outcome 3 should introduce the factors and the technological influences placed upon online and offline media, e.g.

♦ What the internet is,
♦ The structure of CD Rom/DVD disk –
♦ The importance of memory, file formats supported and how these may determine the type of delivery medium.
♦ The purpose of the application would also be an area when deciding this e.g. commercial or educational.

Online — The whole process of publishing a website — 'going live'. This should include bandwidth, internet connections, ISP, domain names, uploading via FTP/web editor/host file manager. Other areas that could be introduced are the importance of directory structures, file-naming conventions, registering sites and technical considerations for other web devices.

Offline — The whole process of preparing a completed multimedia application for delivery. Master copy, disk technology, differences between different formats, different production methods and when they are used, eg when do you need to outsource production runs. Other production considerations such as labelling, packaging and timescales should be covered.

At the time of writing some of the common offline formats are CDRom, CDR, CDRW, DVD, DVDR and DVDRW.

File formats - these are some examples of standard file formats at the time of writing: GIF; JPEG; SWF; QT; RM; HTML; ASP; JSP; CFM; DIR and .EXE. Not all executable formats should be covered, just those pertinent to the authoring package used by the centre. New developments in formats at the time of writing are MPEG4, SVG and MNG.

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

Guidance on the delivery and assessment of this Unit

This Unit should be taught in a contextual basis, whereby the student relates to a realistic development environment. Practical examples and case studies should be used to enable this, as opposed to a completely theoretical approach. Candidates should have a practical introduction to hardware peripherals and cross range of software relevant to the course. This could be through demonstration versions or introductory tutorials. This is a good Unit for covering presentation software eg PowerPoint. Examples of completed professional work should be shown to help the candidate to understand the purpose of the software in industry.
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During the course of delivery of this unit it would enhance learning if reference was made to other current and future units of the course.

Assessment work should be carried out in class, under observation. Where a presentation has been created for this outcome, if candidates have carried out work in their own study time, they will have to demonstrate their knowledge and/or skills to the subject lecturer. Oral evidence, in the form of a set of questions may be used to support this situation.

Two assessments are required for this unit.

Assessment for Outcome 1 will be in the form of 20 short response questions. Each of the knowledge and/or skills must be covered in the assessment and the questions allocated on an equal basis. The assessment must be carried out in a supervised environment, will be closed book and is to be completed in 1 hour. Candidates must answer 12 out of the 20 (60%) questions correctly in order to obtain a pass in this outcome. For Open Learning candidates the closed book assessment could be done by online assessment with limited access, by mentor support where the assessment is sent to and overseen by a nominated third party, or by attendance at a local centre.

In addition for Outcome 1 candidates are also to be assessed on setting up some equipment and conducting basic trouble shooting. Candidates should be able to set up equipment, i.e. connect to printers, scanners, cameras, capture cards, and trouble shoot basic problems. This should be evidenced using a classroom observation checklist. The candidate is not being assessed on their ability to use the various pieces of equipment.

It is recommended that Outcomes 2 and 3 are integrated in the second assessment.
The candidate is required to produce a report, which should be either word-processed or in the form of a simple interactive presentation. In preparation for the report, candidates should have utilised a sample (or been exposed to demonstrations) of the software applications. Candidates should gain practical experience in using a presentation package or authoring packing. At the time of writing, PowerPoint is the standard presentation package and Director, Authorware and Toolbook are authoring packages.

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

Research should be carried out into recent developments and references should be included. The findings of the report will be supported by an observation of the candidate publishing a ready made interactive application to 2 different media eg CD and the web, under classroom observation. It is the centres responsibility to create a small sized application. Alternatively, if the student has produced their report as a presentation, they could publish this.

Where Candidates are studying via Open Learning, they could be given a centre-devised application (created in a previously agreed package) and evidence could be obtained via the URL or CD/DVD containing the published product.

It is recommended that the assessment for Outcome 1 be completed and passed before commencing work on assessment 2. It is recommended that a maximum of 4 weeks should be sufficient time for candidates to complete the integrated assessment for Outcomes 2 and 3.

If candidates wish to claim the core skill *Using IT* at Higher, they may be able to use this *Multimedia Computing: Multimedia Technology* Unit to provide evidence that can be considered for the Higher Core Skill Unit *Information Technology D01D 12*. In this case, candidates should seek minimal support for assessments from lecturers, technicians and classmates, and be encouraged to use online help/tutorial support or suppliers' manuals. The core skills evidence must be gathered as part of the assessment of the three outcomes contained in this Unit *(Multimedia Technology)* and centres should ensure that assessment instruments are written in such a way that the required core skills evidence can be extracted easily. **It is strongly recommended that the instruments of assessment by prior moderated by SQA to ensure that the core skills requirements will be met.** Candidates whose evidence meets the evidence requirements of the *Information Technology D01D 12* Unit must then be entered and passed for the core skills Unit, **_in addition_** to this Unit. (This may have cost implications for candidates and/or centres).

The table of Core Skill Requirements and the Minimum Evidence Requirements at the time of writing are provided below. However centres must ensure that they use the most up-to-date statement of the core skills as determined by the SQA.

Core Skill Requirement	Minimum Evidence Requirements
a) Operate a range of IT equipment giving attention to security and to other users.	Candidates should be able to set up equipment; connect to printers, scanners, cameras, capture cards, and trouble shoot basic problems. This should be evidenced through a classroom observation checklist and coincide with Outcome 1. The candidate is not being assessed on their ability to use the various pieces of equipment.

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

Core Skill Requirement	Minimum Evidence Requirements (cont)
	Throughout the Unit, candidates have to be able to maintain a well-structured file system, perform back-ups, adhere to virus protection measures, log on/off and locate files and applications. This should be evidenced in all three Outcomes, whereby the lecturer throughout the Unit will complete a classroom observation checklist. Candidates must provide a digital version of their assessment and print out of their directory structure.
b) Use software in an unfamiliar context requiring some analysis and design, integration of data and decisions on output format.	Outcome 2 and 3. Candidates must design a report in either a traditional or presentation style. At least 2 types of data should be incorporated into this: graphics, video, audio, and text.
c) Carry out searches to extract and present relevant information from electronic data sources.	Outcome 2 and 3. Candidates must search for specific information on the knowledge and skills covered in these Outcomes. A research strategy must be produced which gives clear evidence of time management and the expected outcome. Research findings must be in the form of at least 2 different data types: text, graphics, images, video and audio. Information must be sourced from obvious electronic data sources e.g. help facilities, websites. Less obvious sources must be used e.g. newsgroups, forums, ftp sites.

If a centre is delivering this unit they can deliver the number of questions identified for each outcome listed in each column by using the SQA electronic assessment system.

Unit No	Unit Name	O1	O2	O3	O4	O5
DF68 34	Multimedia Computing: Multimedia Technology	20				

* The shaded outcomes column will be assessed in line with the method in the unit specification as previously published

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

Some of the evidence requirements may be produced using e-assessment. If you wish to use e-assessment using the SQA online assessment system for this purpose, there is no requirement for you to seek prior approval 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)
(2) 'Assessment & Quality Assurance in Open & Distance Learning' (Feb 2001).

If a centre is presenting this Unit involving the use of short answer or restricted response question types, these may be delivered within the SQA on-line assessment system using the following assessment methods, where appropriate:

♦   Multiple choice
♦   Drag and drop
♦   Multiple response
♦   Mix and match
♦   Gap fill
♦   Re-order
♦   Hot spots

The complete assessment could be made up of any combination of the above. It is expected that the questions will be one of the available types defined in the SQA on-line assessment system.

Assessment must be undertaken in supervised conditions and is closed book.   A candidate should complete this assessment within one hour.   Candidates may not bring to the assessment event any notes, textbooks, handouts or other material. Candidates must answer at 60% of the questions correctly.

Open learning

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance. A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes. For further information and advice, please see *Assessment and Quality Assurance for Open and Distance Learning* (SQA, February 2001 – publication code A1030).

Higher National Unit specification: support notes (cont)

Unit title: Multimedia Computing: Multimedia Technology

Special needs

This 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 Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, 2001).

General information for candidates

Unit title: Multimedia Computing: Multimedia Technology

This unit introduces you to the technology involved in creating interactive multimedia applications. The theory covered is supported by practical experience and case studies. By the end of the Unit you should be able to:

♦ Describe the function of peripherals that may be used to create interactive applications.
♦ Describe the software utilised in the development of interactive applications.
♦ Describe methods for the distribution of interactive applications.

The first outcome introduces the various pieces of equipment involved in interactive application development. As well as learning about their purpose and fundamental technology you will gain hands on experience with some equipment. The first assessment will consist of 20 short response questions and will be taken in supervised conditions. You will need to get 12 answers correct (ie 60%) to pass this element of this outcome. You will also be given a short classroom observation by your lecturer to assess your practical knowledge and skills in setting up equipment and trouble-shooting basic problems.

Outcome 2 covers the range of software used to create interactive applications, common file formats and how to manage files. This will help you to become familiar with the range of software packages you will use on your course and in industry. File management is an important aspect, as large development teams have to share files and storage space, so it is important to use good methods of practice.

With the knowledge of the equipment and software involved in producing applications, the final outcome deals with the technologies involved in publishing interactive applications. Outcomes 2 and 3 are combined into one assessment. Various research methods and sources must be used, to source at least 2 types of data. To put theory into practice you will be observed publishing an interactive application and adhering to procedures for data security.

By the end of this unit you should know:

♦ The equipment involved in producing interactive applications
♦ The fundamental technology of the equipment
♦ How to set up equipment and trouble shoot basic problems
♦ Software categories
♦ The purpose of different software applications
♦ Standard file formats used in interactive applications
♦ How to manage and secure data
♦ The process involved in publishing interactive applications and the technology behind this
♦ How to publish an interactive application to 2 different types of media

As part of this Unit you might also be assessed on the core skill 'Using Information Technology: Higher'. The knowledge and skills you gain in this unit should help you to

understand the learning involved in subsequent units and provide you with the basics required for working in industry.