

National Unit Specification: general information

UNIT	Applied Multimedia (Higher)
NUMBER	DM4D 12
COURSE	Information Systems (Higher)

SUMMARY

This Unit is designed to develop knowledge and understanding of the principles of multimedia applications and practical skills related to the development of multimedia applications through the use of contemporary hardware and software. This knowledge, understanding and practical skills, may then be applied by the candidate to solve practical problems related to multimedia applications. It is designed as an option for candidates undertaking the Higher Information on Systems Course, but is also suitable for anyone wishing to extend and deepen their experience of multimedia applications beyond Intermediate 2 level.

OUTCOMES

1. Demonstrate knowledge and understanding of the principles, features and purposes of multimedia applications.
2. Demonstrate practical skills in the context of multimedia applications using contemporary hardware and software.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following or equivalent:

- ◆ Intermediate 2 Applied Multimedia Unit
- ◆ Intermediate 2 Information Systems
- ◆ Standard Grade Computing Studies at Credit level

Administrative Information

Superclass:	CE
Publication date:	August 2005
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National Unit Specification: general information (cont)

CREDIT VALUE

1 credit at Higher (6 SCQF points at SCQF level 6*).

**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.*

CORE SKILLS

This Unit gives automatic certification of the following:

Core Skill components for the Unit	Critical Thinking	H
	Planning and Organising	H

National Unit Specification: statement of standards

UNIT Applied Multimedia (Higher)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Demonstrate knowledge and understanding of the principles, features and purposes of multimedia applications.

Performance Criteria

- a) Terminology related to multimedia applications is used appropriately.
- b) Descriptions and explanations are technically correct and concise.
- c) Conclusions, predictions and generalisations are made from knowledge and understanding.

Evidence Requirements

Written or oral evidence that the candidate can describe and explain the principles, features and purposes of multimedia applications accurately and concisely. Evidence should be obtained using questions in a closed book test, under supervision, lasting no more than 45 minutes. The test must sample the content (see Information Systems (Higher) Course Content) in each of the following areas:

- ◆ contemporary uses and means of delivery
- ◆ stages of development
 - analysis
 - design of navigational features and HCI
 - design of screens and media elements
 - implementation (general)
 - implementation (media elements)
 - testing
 - documentation
 - evaluation

(The content statements are also reproduced for convenience as a table in the support notes for this Unit).

The standard to be applied is illustrated in the National Assessment Bank items available for this Unit. If a centre wishes to design its own assessments for this Unit, they should be of a comparable standard.

National Unit Specification: statement of standards (cont)

UNIT Applied Multimedia (Higher)

OUTCOME 2

Demonstrate practical skills in the context of multimedia applications using contemporary hardware and software.

Performance Criteria

- a) A range of appropriate hardware is used effectively and efficiently.
- b) An appropriate range of features of software is used effectively and efficiently.
- c) Practical tasks are planned and organised with minimal guidance.
- d) Practical tasks are undertaken in an appropriate range of familiar contexts.

Evidence Requirements

Observation checklist showing that the candidate has demonstrated practical skills at an appropriate level in all of the following contexts:

- ◆ analysis of a project brief
- ◆ design of a navigation map and series of storyboards
- ◆ implementation of a 'non-linear' multimedia application
- ◆ testing of a multimedia application
- ◆ documentation of a multimedia application
- ◆ evaluation of a multimedia application

Hard copy evidence should be provided of implementation and one other of these skills.

These practical skills may all be demonstrated in a single extended task, or in a number of smaller tasks.

The practical skills should be demonstrated in the context defined in the content statements (see Information Systems (Higher) Course Content).

The candidate will be allowed access to books, notes and online help while completing these tasks.

(The content statements are also reproduced for convenience as a table in the support notes for this Unit).

The standard to be applied is illustrated in the National Assessment Bank items available for this Unit. If a centre wishes to design its own assessments for this Unit, they should be of a comparable standard.

National Unit Specification: support notes

UNIT Applied Multimedia (Higher)

This part of the Unit Specification is offered as guidance.

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

The content for this Unit is detailed below (and also in the National Course Specifications: Course details.)

Content statements in the left-hand column describe the content covered in the corresponding Unit at Intermediate 2 level, and are included here to clarify the context for the new learning for this Unit. They indicate the prior learning required by the candidate before undertaking new learning within this Unit.

Content statements in the right-hand column define the new content for this Unit.

Content Statements: Contemporary uses and means of delivery	
<i>Intermediate 2</i>	Higher
<p><i>Simple description and exemplification of how multimedia applications are used in the following areas:</i></p> <ul style="list-style-type: none"> ◆ <i>business</i> <ul style="list-style-type: none"> ○ <i>advertising and selling products</i> ○ <i>presentations</i> ◆ <i>education</i> <ul style="list-style-type: none"> ○ <i>CAL</i> ○ <i>reference materials</i> ◆ <i>home</i> <ul style="list-style-type: none"> ○ <i>games</i> ○ <i>leisure pursuits</i> ◆ <i>public places</i> <ul style="list-style-type: none"> ○ <i>information points</i> 	<p>Description and exemplification of how multimedia applications are used in the following areas:</p> <ul style="list-style-type: none"> ◆ <i>business</i> <ul style="list-style-type: none"> ○ <i>e-commerce</i> ○ <i>presentations</i> ○ <i>teleconferencing</i> ○ <i>collaborative working</i> ◆ <i>training</i> <ul style="list-style-type: none"> ○ <i>CBT</i> ○ <i>simulations</i> ◆ <i>home</i> <ul style="list-style-type: none"> ○ <i>entertainment</i> ○ <i>edutainment</i> ○ <i>shopping</i>
<p><i>Exemplification of appropriate uses for delivery media:</i></p> <ul style="list-style-type: none"> ◆ <i>CD-ROM/DVD-ROM</i> ◆ <i>kiosk</i> ◆ <i>WWW</i> 	<p>Description of multimedia delivery media and exemplification of appropriate uses:</p> <ul style="list-style-type: none"> ◆ <i>CD-ROM/DVD-ROM</i> ◆ <i>kiosk</i> ◆ <i>WWW</i> ◆ <i>mobile communication devices</i> ◆ <i>hybrids</i> ◆ <i>virtual reality</i>

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

<p><i>Comparison of delivery media in terms of:</i></p> <ul style="list-style-type: none"> ◆ <i>data capacity</i> ◆ <i>ease of update</i> 	<p>Comparison of relative advantages/disadvantages of different multimedia delivery media in terms of:</p> <ul style="list-style-type: none"> ◆ data capacity ◆ data transfer rate/bandwidth ◆ information ‘window’ size ◆ ease of update
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Content Statements: Stages of development — analysis	
<i>Intermediate 2</i>	Higher
<p><i>Identification of the following aspects of the analysis stage :</i></p> <ul style="list-style-type: none"> ◆ <i>purpose</i> ◆ <i>user / audience</i> ◆ <i>content</i> ◆ <i>delivery media</i> ◆ <i>budget</i> ◆ <i>timescale</i> 	<p>Description of the difference between a project brief and contractual requirements specification.</p> <p>Description of the contents of requirements specification, including:</p> <ul style="list-style-type: none"> ◆ purpose ◆ user/audience ◆ content ◆ delivery media ◆ budget ◆ timescale <p>Description of the uses made of the requirements specification by:</p> <ul style="list-style-type: none"> ◆ client ◆ multimedia developer

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

Content Statements:	
Stages of development — design of navigation structures and HCI	
<i>Intermediate 2</i>	Higher
<p><i>Simple representation using navigation maps of the different types of navigation structures to include:</i></p> <ul style="list-style-type: none"> ◆ <i>linear</i> ◆ <i>hierarchical</i> ◆ <i>web</i> 	<p>Representation and comparison of the different types of navigation structures to include:</p> <ul style="list-style-type: none"> ◆ linear ◆ hierarchical ◆ web ◆ composite/hybrid
<p><i>Description and use of complex search facilities (AND).</i></p>	<p>Implications of increasing complexity of navigation structures including ‘Lost in Hyperspace’ and resulting solutions:</p> <ul style="list-style-type: none"> ◆ backtracking ◆ highlighting ◆ history ◆ bookmarks ◆ breadcrumbs ◆ use of search facilities (AND, OR, NOT)
<p><i>Description of user interfaces:</i></p> <ul style="list-style-type: none"> ◆ <i>CLI</i> ◆ <i>menu</i> ◆ <i>form fill-in</i> ◆ <i>direct manipulation (GUI)</i> 	<p>Description of user interfaces with relative advantages/disadvantages:</p> <ul style="list-style-type: none"> ◆ CLI ◆ menu ◆ form fill-in ◆ direct manipulation (GUI)
	<p>Description and exemplification of use of ‘metaphors’.</p>
	<p>Description and exemplification of guidelines for good user interface design:</p> <ul style="list-style-type: none"> ◆ consistency ◆ differing ability levels ◆ providing feedback ◆ easy correction of errors ◆ avoiding information overload

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

Content Statements: Stages of development — design of screens and media elements	
<i>Intermediate 2</i>	Higher
<p><i>Description and use of storyboarding to represent the design of screens including:</i></p> <ul style="list-style-type: none"> ◆ <i>layout of screen elements</i> ◆ <i>user interface</i> ◆ <i>transitions</i> ◆ <i>navigation</i> 	<p>Critical evaluation of screen design in terms of:</p> <ul style="list-style-type: none"> ◆ layout of elements ◆ user interface ◆ transitions ◆ navigation
	<p>Explanation of the difference between an outline and detailed storyboard.</p>
<p><i>Description and use of general design principles (text):</i></p> <ul style="list-style-type: none"> ◆ <i>quantity of text</i> ◆ <i>choice of font(s)</i> ◆ <i>alignment and size</i> ◆ <i>consistency in headings/subheadings/body</i> ◆ <i>use of lists and tables</i> ◆ <i>use of white space</i> 	<p>Description and use of additional text features:</p> <ul style="list-style-type: none"> ◆ kerning ◆ anti aliasing <p>Explanation of difficulties of using non-standard fonts and solutions including:</p> <ul style="list-style-type: none"> ◆ embedding fonts ◆ graphical text
<p><i>Description and use of general design principles (graphics):</i></p> <ul style="list-style-type: none"> ◆ <i>number of graphics per screen</i> ◆ <i>captions</i> ◆ <i>text wrap</i> 	<p>Explanation of implications of using colour and graphics including:</p> <ul style="list-style-type: none"> ◆ different platforms/gamma correction ◆ dithering ◆ web palettes ◆ progressive display
<p><i>Description and use of general design principles (audio):</i></p> <ul style="list-style-type: none"> ◆ <i>advantages/disadvantages of background music, sound effects</i> ◆ <i>user controlled(volume, on/off)</i> ◆ <i>voice output</i> 	<p>Description of the advantages and disadvantages of streaming audio as against downloading audio.</p>
	<p>Explanation of implications of using video:</p> <ul style="list-style-type: none"> ◆ user controlled (using VCR controls) ◆ danger of flashing sequences/epilepsy ◆ streaming video vs downloading video

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

Content Statements: Stages of development — implementation (general)	
Intermediate 2	Higher
<p><i>Description of the basic functions and features of software for creating multimedia applications:</i></p> <ul style="list-style-type: none"> ◆ presentation ◆ authoring (icon-based and scripting) ◆ web-page 	<p>Description of advanced functions and features of software for creating and delivering multimedia applications:</p> <p>creation</p> <ul style="list-style-type: none"> ◆ presentation ◆ authoring (icon-based and scripting) ◆ web-page <p>delivery</p> <ul style="list-style-type: none"> ◆ stand-alone applications ◆ players
<p><i>Comparison of the different types of software for creating multimedia applications in terms of:</i></p> <ul style="list-style-type: none"> ◆ ease of use ◆ cost ◆ programming requirements 	<p>Explanation of advantages and disadvantages of both stand-alone applications and players.</p>
<p><i>Basic description of personnel and their role:</i></p> <ul style="list-style-type: none"> ◆ project manager ◆ multimedia designer ◆ subject expert ◆ media specialists (graphic, audio) ◆ multimedia programmer ◆ webmaster 	<p>Description and exemplification of the skills required by personnel:</p> <ul style="list-style-type: none"> ◆ project manager ◆ multimedia designer ◆ subject expert ◆ media specialists (graphic, audio, video) ◆ multimedia programmer ◆ webmaster

Content Statements: Stages of development — implementation (media elements)	
Intermediate 2	Higher
<p><i>Explanation of how colour depth and resolution affect the file size and clarity of graphics.</i></p>	<p>Simple description of graphic file types TIFF, JPEG and GIF in terms of:</p> <ul style="list-style-type: none"> ◆ colour depth ◆ resolution ◆ file size ◆ degree of compression ◆ appropriate uses
<p><i>Explanation of how sampling rate and sampling depth (sampling resolution) affect the file size and audio quality.</i></p> <p><i>Explanation of the need for compression.</i></p>	<p>Simple description of audio file types MP3 and MIDI in terms of:</p> <ul style="list-style-type: none"> ◆ contents of file ◆ file size ◆ degree of compression ◆ appropriate uses

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

	Explanation of how frame rate, video window size and compression affect video file size and quality.
	Recognition of MPEG as video file type.
<i>Definition of the terms node, link and anchor.</i>	Explanation and exemplification of the structure of a URL. Comparison between absolute and relative pathnames.

Content Statements: Stages of development — testing	
<i>Intermediate 2</i>	Higher
<i>Explanation of the need for testing.</i>	
<i>Simple description and exemplification of different tests that should be carried out including:</i> <ul style="list-style-type: none"> ◆ <i>screen tests</i> ◆ <i>navigation tests</i> 	Description and exemplification of the different types of testing that should be carried out including: <ul style="list-style-type: none"> ◆ screen testing ◆ integration testing ◆ acceptance testing ◆ usability testing

Content Statements: Stages of development — documentation	
<i>Intermediate 2</i>	Higher
<i>Identification of the contents and purpose of user documentation including:</i> <ul style="list-style-type: none"> ◆ <i>hardware and software system requirements</i> ◆ <i>user instructions</i> 	Identification of the two different types of documentation and their contents including: <ul style="list-style-type: none"> ◆ project development documentation (requirements specification, navigation map, storyboards, record of testing) ◆ user documentation (hardware and software system requirements, user instructions)
<i>Description of need for clearly documented copyright licenses including Copyright, Design & Patents Act.</i>	Description of need for clearly documented copyright licences including: <ul style="list-style-type: none"> ◆ use of other people’s materials (description and exemplification of the purpose of the Copyright Design & Patents Act, Fair Use policy) ◆ protection of your own materials (parts of a multimedia application that can be copyrighted, duration of copyright, legal redress, means of tracing copyrighted materials: enforced online registration and digital watermarks)

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

Content Statements: Stages of development — evaluation	
Intermediate 2	Higher
<i>Evaluation of a multimedia application in terms of:</i> ♦ <i>fitness for purpose</i>	Critical evaluation of a multimedia application in terms of: ♦ fitness for purpose ♦ accessibility(disabilities) ♦ clarity of presentation

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Candidates will require individual access to appropriate computer hardware and software throughout this Unit.

The two Outcomes should be delivered in an integrated way. Appropriate practical activities should be taught and used to illustrate and exemplify the knowledge and understanding required for Outcome 1.

Candidates who have completed the *Applied Multimedia* Unit at Intermediate 2 level should already have covered the content listed in the left-hand column of the content grids, but may well need to revise this material before progressing to the right-hand column.

The amount of time spent on each area of content will vary depending on the teaching methodology used and the ability and prior experience of the candidates. However, the following times are a rough guide:

Contemporary uses and delivery media	7 hours
Stages of development	
analysis	3 hours
design	8 hours
implementation	11 hours
testing	2 hours
documentation	3 hours
evaluation	2 hours

1½ hours should be set aside to:

- (a) administer the Outcome 1 test
- (b) gather evidence for Outcome 2

A further 2½ hours is allowed for remediation and re-assessment if required.

If the Unit is delivered as part of a Course, the Course documentation will provide further information on teaching and learning in a Course context, including the identification of a number of ‘themes’ to facilitate holistic learning across the Course.

National Unit Specification: support notes (cont)

UNIT Applied Multimedia (Higher)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

National Assessment Bank tests have been created specifically to assess Outcome 1 of the Unit. This assessment consists of a closed book test, and must be conducted under examination conditions. In order to gain success in this Outcome, the candidate must achieve at least the cut-off score for the test. If a centre wishes to design its own assessments for this Unit, they should be of a comparable standard.

Outcome 2 requires the candidate to demonstrate practical skills while using contemporary hardware and software. These practical skills will normally be demonstrated in the context of a number of relatively short tasks. However, they may be demonstrated in the context of a single extended task. The tasks will normally be undertaken by the candidate as part of the teaching and learning activities of the Unit, rather than as separate formal assessment activities. The candidate will be allowed access to books, notes and online help while completing the tasks.

To gain success in this Outcome, the candidate must demonstrate practical skills at an appropriate level in all of the following contexts, defined in the content statements (see Information Systems (Higher) Course Content):

- ◆ analysis of a project brief
- ◆ design of a navigation map and series of storyboards
- ◆ implementation of a 'non-linear' multimedia application
- ◆ testing of a multimedia application
- ◆ documentation of a multimedia application
- ◆ evaluation of a multimedia application

Hard copy evidence should be provided for implementation and one other of these skills. Note that this need not be formal documentation — print outs, screen shots and handwritten notes on analysis and design would all be examples of suitable evidence.

An observation checklist for Outcome 2 is provided in the National Assessment Bank materials.

All evidence must be retained by the centre. The assessment of this Unit is subject to moderation by SQA.

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, September, 2003).