



**Arrangements for:**  
**HND Interactive Media**  
**Group Award Code: G9AY 16**  
**Validation date: March 2009**

**Date of original publication: April 2009**

**Version: 17 (March 2017)**

## **Acknowledgement**

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

## 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. Centres are advised to check SQA's APS Navigator to confirm they are using the up to date qualification structure.

**NOTE:** Where a Unit is revised by another Unit:

- ◆ No new centres may be approved to offer the Unit which has been revised.
- ◆ Centres should only enter candidates for the Unit which has been revised where they are expected to complete the Unit before its finish date.

Version number	Description	Date
17	<b>Revision of Unit:</b> DV0M 34 Work Experience has been revised by HJ4W 34 Work Placement and will finish on 31/07/2019.	28/03/17
16	<b>Revision of Unit:</b> F8L2 35 Game Customisation and Scripting has been revised by HH3E 35 Game Customisation and Scripting and will finish on 31/07/2019.	18/11/16
15	<b>Additional Option Unit:</b> HG1K 34 Professional Career Development in the IT Industry into Options Group 1	31/08/16
14	<b>Additional Optional Unit: DV65 e-commerce: Introduction</b> added as an alternative to DH39 34 Internet: Introducing e-commerce	06/10/15
13	<b>Additional Optional Unit:</b> H9DE 34 Digital Skills	27/08/15
12	<i>Software Development: Developing a Small Scale Stand Alone Application (H17W 34) and Developing Software: Introduction (H173 34) added as optional Units to framework.</i> Articulation route for Napier University updated.	09/06/14
11	<b>Additional optional Units:</b> Developing Mobile Web Based Applications (H17J 34), Software Development: Programming Foundations (H17X 34).	28/01/14
10	<b>Revision of Unit:</b> FP25 35 Interactive Media: Graded Unit 2 has been revised by H4LF 35 and will finish on 31/07/2016. DM0V 34 Creative Industries: An Introduction has been revised by H4A1 34 and will finish on 31/07/2015.	10/09/13
09	<b>Additional optional Unit:</b> <i>Game Customisation and Scripting (F8L2 35).</i>	15/08/13
08	<b>Changes to codes:</b> <i>Sound and Vision for Interactivity</i> from F6JC 35 ( <i>lapse date 31/07/2012, finish date 31/07/2014</i> ) to H31B 35. <i>Designing and Developing an Interactive Media Product</i> from F6V5 35 ( <i>lapse date 31/07/2012, finish date 31/07/2014</i> ) to H2X8 35.	07/02/13
07	<b>Added to framework:</b> <i>Mobile Technology H17R 35.</i>	25/01/13
06	<b>Changes to codes:</b> <i>Interactive Media: Graded Unit 2</i> from F6V6 35 ( <i>lapse date 31/07/2011, finish date 31/07/2013</i> ) to FP25 35. <i>Interactive Media Composition</i> from F6BW 35 ( <i>lapse date 31/07/2011, finish date 31/07/2013</i> ) to FW2V 35. <i>Self Describing Data (XML)</i> from F6C1 35 ( <i>lapse date 31/07/2011, finish date 31/07/2013</i> ) to FM97 35. <i>Computer Arts and Design: Theory and Practice</i> from DW9N 35 ( <i>lapse date 31/07/2011, finish date 31/07/2013</i> ) to FD65 35. <b>Changes to codes and titles:</b> <i>Software Development: Object Oriented Programming</i> from DH3C 35 ( <i>lapse date 31/07/2013, finish date 31/07/2015</i> ) to <i>Systems Development: Object Oriented Analysis and Design H172 35</i> . <i>Software Development: Relational Database Systems</i> from DH3D	21/08/12

	35 and FE77 35 ( <i>lapse date 31/07/2013, finish date 31/07/2015</i> ) to <i>Relational Database Management Systems H16W 35</i> . <b>Added to framework:</b> <i>Website Design: Planning and Design FW5C 34. Website Design: Multimedia Content Creation FW5D 34. Website Design: Development Technologies FW5E 34. Web Design: An Introduction DV5M 34. System Development: Object Oriented Design DM3H 35. Systems Development: Object Oriented Analysis and Design H172 35.</i>	
05	Updated Core Skills information for Interactive Media: Graded Unit 2. Inclusion of alternative Interactive Media Composition Unit to Mandatory Section.	26/09/11

<b>Version number</b>	<b>Description</b>	<b>Date</b>
04	Additional Optional Units added to structure	30/06/11
03	Additional optional Units added to structure.	23/07/10
02	Updated Core Skills information.	09/07/09

## Contents

1	Introduction .....	6
2	Rationale for the development of the Group Award .....	6
2.1	Target sector and level of employment .....	9
2.2	Target candidates .....	10
2.3	Relationship with other SQA awards .....	11
2.4	Links to Occupational Standards .....	11
3	Aims of the Group Award .....	12
3.1	General aims of the Group Award .....	12
3.2	Specific aims of the Group Award .....	12
4	Access to Group Award .....	13
5	Group Award structure .....	14
5.1	Mandatory Units .....	14
5.2	Optional Units .....	15
5.3	Mapping information .....	17
5.4	Articulation, professional recognition and credit transfer .....	19
6	Approaches to delivery and assessment .....	20
6.1	Context and content .....	20
6.2	Sequence of delivery .....	21
6.3	Assessment strategy .....	26
6.4	E-Assessment .....	27
6.5	Core Skills .....	28
6.6	Graded Unit Summary .....	30
7	General information for centres .....	32
8	General information for candidates .....	32
9	Glossary of terms .....	35
10	Appendices .....	36
	Appendix 1: National Occupational Standards mapping .....	37
	Appendix 2: Professional Development Awards and Vendor Certification .....	40
	Appendix 3: Credit transfer documentation .....	41

# 1 Introduction

This is the Arrangements Document for the new Group Award in Interactive Media (HND) which was validated in March 2009. This document includes: background information on the development of the Group Award, its aims, guidance on access, details of the Group Award structure, and guidance on delivery.

The award title **HND Interactive Media** reflects the contents of the Units contained within both the mandatory and the optional sections of the award and shows the diverse nature of this dynamic and converging industry. Consideration, thought and consultation went into choosing the award title, including advice from many industry advisors, thirteen Scottish Colleges, fifteen QDT members and over fifty current learners.

The HND Award subsumes the **HNC Interactive Media** framework, which was validated in May 2008, and builds upon its aims, developing an award which enhances candidates' contemporary vocational skills and sector knowledge, preparing them for progression into Higher Education or employment. One significant design objective, identified during the research conducted for the development of the HNC award, was the ability to allow centres to tailor their Year 2 provision towards developing extended skills and knowledge within either Web Development or Digital Content Creation.

This became possible as Web Development and Digital Content Creation share a set of core competencies, identified by the sector skills council, employers and educationalists, which can be developed through the mandatory Units of the award. A range of optional Units provides centres with the ability to construct a tailored framework to respond to local needs and to candidate requirements.

Several Units allow for vendor-developed curriculum to be used to support learning and teaching. This further provides opportunities to prepare candidates to undertake vendor-certified examinations. There are several professional development awards (PDAs) which may be achieved within this award. Further information is available on 'Professional Development Awards and Vendor Certification' which is contained within **Appendix 2**.

Recommended framework structures and delivery schedules are contained for guidance within this document.

## 2 Rationale for the development of the Group Award

The past five years have seen an explosion in career opportunities within the digital media and the interactive media industries. As they reach maturity, these sectors continue to recruit creative and innovative individuals capable of developing high-quality, interactive media solutions.

The once separate disciplines of graphic design, computer programming, telecommunications, audio/visual and media production have converged, creating a whole new multimedia industry. Developments in affordable technology have meant that this new industry has continued to evolve and today the focus has shifted from **Multimedia** to **Interactive Media**.

Interactive media covers a broad spectrum of interests ranging from interactive entertainment, e-learning, education, animation, publishing, computer systems design, audio and video production and distribution channels such as the internet and broadcast technologies. The term Interactive Media highlights the interactive component that is a key characteristic of the difference between the older style media and the new. Within this sector, technology develops apace, resulting in a constant demand for re-skilling and up-skilling. Interactive media, including digital content accessed over the internet, is at the heart of this growth and, as the technologies increase in sophistication, the demand for advanced skills within these areas continues to grow accordingly.

Scotland has a rich tradition of innovation and enterprise within the interactive media sector, covering websites, intranets, multimedia CD-Rom and DVD creation, electronic games, mobile device applications and interactive television. There has been considerable recent expansion of this sector in Scotland, including a number of world-class computer games developers.

The creative industries and digital media sector, of which interactive media forms a significant part, contributes almost £5 billion per annum to the Scottish economy and employs around 27,000 people within some 1,700 companies. The large proportion of this is made up of micro businesses, although increasingly there are departments within larger organisations, government and public sector agencies that require staff with interactive media skills.

An employment study conducted by Skillset in 2006 indicated that almost 38% of the interactive media workforce in Scotland is made up of individuals working on a freelance basis. A breakdown of employment statistics shows that over 200 people work within the animation industry, with a further 600 within the computer games sector. The film industry employs over 600 people, whilst a further 4,200 individuals work within TV and radio. Almost 12,500 people are employed within the publishing industry, with a further 2,800 employees within the photo-imaging sector, with over 3,000 people working within the key platforms of web, internet and interactive television and offline media.

This diversity suggests that successful entrants require a strong foundation in interactive media skills upon which to build industry-specific abilities, skills and knowledge, coupled with business acumen, creativity and entrepreneurial flare. Addressing these requirements is one of the aims of this award.

The once separate boundaries between computing, art and design, television and radio, film and photography, advertising and communications are converging as technology becomes intertwined with creativity. This has brought about closer integration between computing, communication and creative industries, often sharing fundamental skills and knowledge in regards to interactive media. Yet, despite the diversity of the interactive media industry, the majority of activity can be classified within two broad categories, namely, Web Development and Digital Media Creation.

Web Development is a broad term for activities relating to the development of websites for the World Wide Web or Intranets. Usually the term refers only to the non-design aspects of building websites, for example writing mark-up and coding. Web development can range from developing the simplest static single page of plain text to the most complex web-based internet applications, electronic businesses, or social network services.

Digital Content Creation focuses on the creation and modification of digital content, such as animation, audio, graphics, images or video, as part of the production process before presentation in its final medium. This large field encompasses many segments such as 3D graphics, audio editing, compositing, authoring, etc.

A recent survey by the Sector Skills Council for the Audio Visual Industries provides evidence that employers in Scotland are reporting concerns about the number and quality of higher education courses that provide adequate grounding in interactive media. A similar picture is emerging nationally with organisations such as the British Interactive Media Association expressing similar concerns.

It was the need for an award which addressed these key areas that drove the development of the new HNC Interactive Media award in 2007 and informed the subsequent development of the HND Interactive Media award during 2008/9. Ensuring that the Scottish education system continues to provide the finest opportunities for learners to develop the skills and knowledge required to enter this competitive market was a top priority for the qualification development team. The award provides candidates with the opportunity to develop their knowledge, skills and understanding of contemporary developments within the interactive media sector by encouraging the use of industry-standard software, techniques and technologies throughout its Units. It also seeks to provide a route for those currently working within the sector to undertake continuing professional development, enhance their qualifications, and learn new skills through the incorporation of several professional development Awards (PDAs). These PDAs can be delivered as part of the HND Interactive Media award or delivered independently, preparing candidates for vendor certification.

Development of this award

The **HND Interactive Media** Award has been developed in conjunction with the Scottish Qualifications Authority (SQA), a large number of Scottish Further and Higher Education Colleges, industry representatives and several Scottish Universities. It has been designed to address the requirements of the Interactive Media Industry by developing a range of core technical and vocational competencies, allowing for progression to further study at Degree level or employment, initially at a junior level, within the Interactive Media Sector.

The new award incorporates and builds upon the nationally devised **HNC Interactive Media Award**, which was validated in May 2007 and has been designed to be part of the national qualifications framework, providing clear opportunities for progression within the SCQF framework. In line with recommendations from the Foster Report 2005, the new award seeks to streamline qualifications and learning pathways by replacing three existing frameworks devised locally by centres during 2003, namely:

G7A6 16: HND Interactive Multimedia Creation  
G7DD 15: HNC Multimedia Computing: Web Development  
G7DF 16: HND Multimedia Computing

The new award incorporates the successful and current elements from each of these awards whilst introducing new elements that reflect the changing and converging nature of the sector. The Awards content and structure have been designed to map to the National Occupational Standards (NOS) produced by Skillset in consultation with the interactive media industry. This ensures, as far as possible, that it is attuned to the needs of the sector. A detailed mapping is contained within **Appendix 1**.



Access to the award is achieved through a variety of routes including the possession of the National Certificate in Digital Media Computing at SCQF level 5. (See the section 'recommended access to the Group Award' for further detail). These awards are popular with younger candidates and should provide a sound introduction to the interactive multimedia sector.

## 2.1 Target sector and level of employment

The **HND Interactive Media** award focuses on developing candidates' vocational skills, interpersonal skills, sector knowledge and Core Skills to a standard commensurate with those required by industries that develop or utilise interactive media. These industries are varied and span many disciplines which are reflected in the range of job roles and titles which exist.

The framework provides opportunities to tailor the focus of the award towards either Web Development or Digital Content Creation through the delivery of optional Units which extend the range of possible employment areas.

Consultations with the interactive media design and development sector have indicated that successful candidates may expect to seek employment, initially at a junior level, within the following disciplines which are by no means exhaustive:

### **Digital Content Creation**

Application Designer — their role is to create the 'look and feel' of an interactive media product

Content Analyst — their role is to scope and plan interactive media product's content and determine its overall style

Video Content Producer — their role is to plan, capture and manipulate video content

Digital Graphic Designer — their role is to design creative visual communication solutions

Photographic Editors — their role is to source and prepare visual content for incorporation into digital media

### **Web Development**

Web Editor — their role is to plan and oversee the ongoing management of a web site and the publication of content to it

Web Programmer — their role is to produce computer software in order to give a product its functionality

Search Engine Optimisation (SEO) — their role is to optimise a web site or pages to make them as visible as possible to Internet search engines, in order to maximise traffic to them

Ecommerce Developer — their role is to implement interactive media solutions for businesses or institutions

### **Generic Interactive Media**

Information Architect — their role is to interpret system requirements in order to design the overall user experience of an interactive media product

Production Assistant — their role is to contribute to the production of an interactive media product by helping other members of the team

Usability Specialist — their role is to ensure an interactive media product meets the needs of its intended audiences

Developer — their role is to create an interactive media product

Project Manager — their role is to plan, schedule and co-ordinate interactive media development projects, ensuring they run smoothly, on time and within budget.

Feedback from potential employers indicate that candidates with this HND Award are more likely to achieve employment within larger organisations such as the financial services, public bodies, local government or the health sector, creating interactive media content and maintaining distribution mechanisms such as intranet and internet sites.

The specialist Content creation and Web development companies contacted indicated that they tended to recruit mainly at graduate level for specific technical roles, but would consider candidates at HND level for junior roles if they were able to demonstrate a strong portfolio of work.

## **2.2 Target candidates**

The HND Interactive Media award is designed to offer candidates a balance between academic knowledge, Core Skills and vocational training tailored to reflect the needs of the diverse and constantly evolving interactive media industry. Entry to the award is at the discretion of a centre.

The award will be suitable for a wide range of candidates including:

- School leavers wishing to pursue a career path in interactive media
- NQ digital media candidates wishing to develop their skills and knowledge
- Students progressing from the HNC Interactive Media Award
- Students wishing to progress on to Degree level study
- Mature applicants wishing to change their career focus
- Adult returners and those already in work or self-employment
- Candidates from creative backgrounds who wish to gain complementary technical skills

It is anticipated that one of the main sources of applicants will be school leavers from 5th or 6th year who have achieved at higher level (SCQF levels 5 and 6) and can demonstrate ability within the computing, science, mathematics or creative cognate areas. Given the recent introduction of the Digital Cre8tor courses (sponsored by the British Computer Society) within the school curriculum, it can reasonably be anticipated that more interest in these topics will be fostered at an earlier age, giving a larger uptake for the relevant higher-level courses.

The award may also provide a coherent progression route for students who have demonstrated exemplary performance and achievement within the newly introduced National Certificate in Digital Media Computing Awards. The broad range of technical and personal skills developed throughout this award will improve candidate employability opportunities.

As the award incorporates three Professional Development Awards (PDAs) mapped to vendor curriculum and professional awards, parts of the HND Interactive Media award may also be suited to personnel from the Interactive Media industry wishing to update or formalise their professional certification.

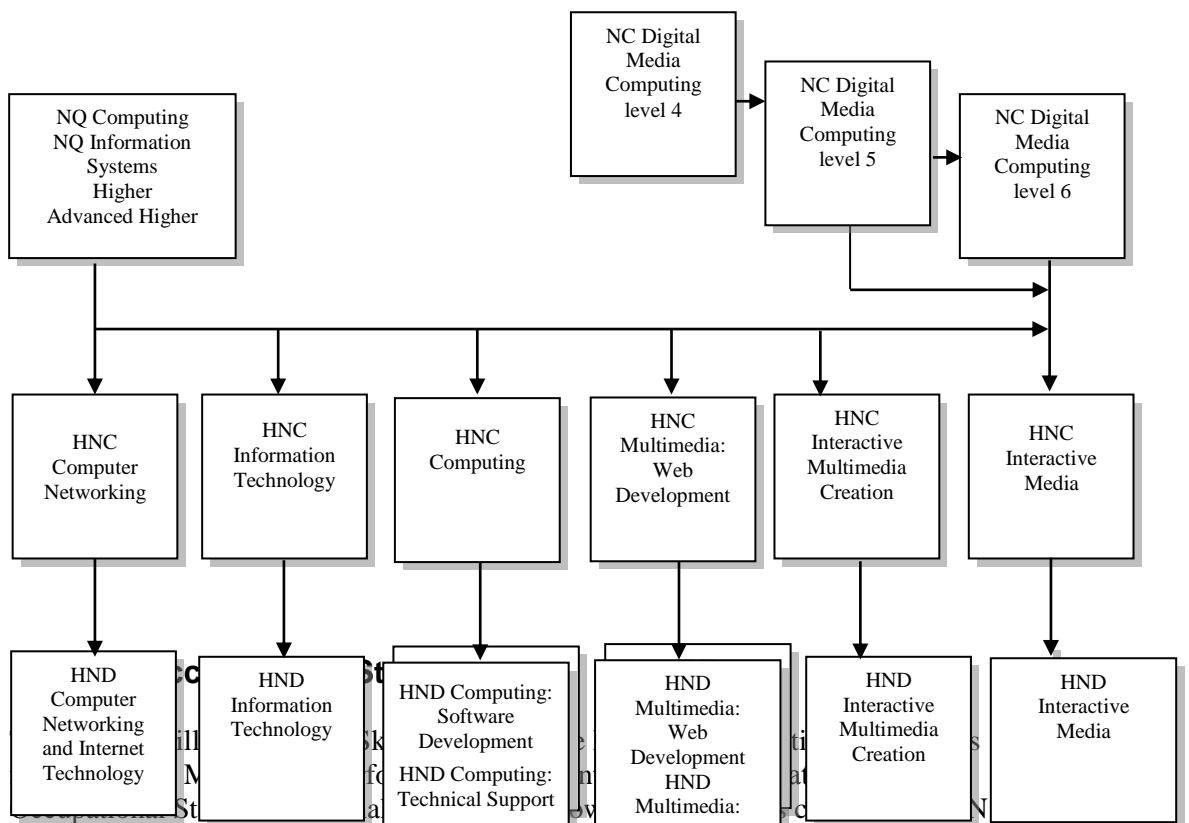
### 2.3 Relationship with other SQA awards

The **HND Interactive Media** award seeks to streamline qualification and learning pathways by replacing three existing frameworks devised locally by centres during 2003, namely:

- G7A6 16: HND Interactive Multimedia Creation
- G7DD 15: HNC Multimedia Computing: Web Development
- G7DF 16: HND Multimedia Computing

It provides a clear progression route for candidates who have achieved the newly introduced National Certificate in Digital Media Computing Awards and the **HNC Interactive Media** award. It provides opportunities for progression within the Scottish Credit and Qualifications Framework whilst matching the design rules of other HND Awards to ensure consistency.

The diagram below outlines the awards relationship within the Computing and IT cognate area:



### 2.4

Units. A detailed mapping is contained within **Appendix 1**.

### **3 Aims of the Group Award**

#### **3.1 General aims of the Group Award**

The HND Interactive Media award has a range of broad aims, which are generally applicable to all equivalent Higher National awards. Some of these aims are to:

- 1 develop candidate knowledge and skills, such as planning, analysing and synthesizing.
- 2 develop employment skills and enhance candidate employment prospects.
- 3 develop progression within the Scottish Credit and Qualifications Framework.
- 4 equip students for employment by developing and promoting forward-looking, innovative and aspirational approaches to their work.
- 5 develop study and research skills.
- 6 develop transferable skills including Core Skills.
- 7 provide academic stimulus and challenge, and foster an enjoyment of the subject.

#### **3.2 Specific aims of the Group Award**

The specific aims of the award reflect the aspirations of candidates, guidance from the Sector Skills Council, and requirements as expressed by industry contacts, experiences from centres, and the standards required by the Scottish Qualifications Authority (SQA). The specific aims are to:

- 8 offer an up-to-date award that reflects recent development within the interactive media sector.
- 9 enable candidates to develop a mastery of contemporary software packages from industry leaders such as Adobe, Microsoft, Autodesk, Avid, etc.
- 10 provide a framework which is flexible and responsive to a rapidly-changing interactive media industry.
- 11 develop enduring vocational and specialist knowledge rather than transient, software or platform specific skills.
- 12 enhance employability through engagement with National Occupational Standards.
- 13 allow for vendor-developed curriculum to be used in a supporting role and provide opportunities for candidates to prepare for vendor certification.
- 14 promote collaborative and individual enterprise coupled with entrepreneurial and business skills.
- 15 promote achievement and skills development through 'evidence by product'.
- 16 offer options for vocational specialism in web development, interactive media creation and asset creation.
- 17 promote confidence and self-esteem.
- 18 encourage higher level skills such as self-directed learning and critical thinking.

## 4 Access to Group Award

In line with other HND Group Awards, access to this course will be at the discretion of the centre, however, it would be advisable to ensure that potential candidates display an appreciation of the types of general activities involved in Interactive Media. It is also recommended that potential candidates display competency with basic computing rudiments.

The following recommendations are for guidance only. Examples of appropriate entry requirements are specified below. They are not exhaustive or mutually exclusive and may be considered in a variety of combinations:

Scottish Group Award in Computing and Information Technology at Intermediate 2 level.

National Certificate in Digital Media Computing (SCQF levels 5 and 6)

Any other relevant Scottish Group Award at Intermediate 2 or Higher level

Any relevant National Qualifications at higher level.

An SVQ at level 2 or 3 in Computing, Information Technology or other relevant area

HNC Interactive Media (entry to second year)

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 in computing or IT has been gained through work experience.

Centres may wish to give consideration to inferred or actual evidence of candidates' Core Skills.

Candidates with qualifications at SCQF level 6 within the SCQF framework in art or graphic design may be suitable for entry into this award, provided they can also evidence suitable experience in the form of a portfolio.

Mature candidates with suitable work experience in computing or IT 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.

In addition to the above, each Higher National Unit specification includes recommended access levels. It would be expected that candidates would normally satisfy both sets of access requirements.

## 5 Group Award structure

To gain the award of Higher National Diploma in Interactive Media at SCQF level 8, candidates must successfully achieve **thirty credits** comprising of:

17 credits from Table 1 (Mandatory Units), plus

13 credits from Table 2 (Optional Units)

At least 64 SCQF credit points at SCQF level 8

### 5.1 Mandatory Units

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
Interactive Media: Planning	F1VS 34	8	7	1
Working Within a Project Team	DH21 34	8	7	1
Interactive Media: Authoring	F1VT 34	16	7	2
User Interface Design	F1VV 34	8	7	1
Digital Imaging: Bitmap and Vector	F1YX 34	8	7	1
Interactive Media: Graded Unit 1	F21G 34	8	7	1
Project Management for IT	F1W0 34	8	7	1
Interactive Media Composition	FW2V 35	8	8	1
Human Computer Interface	F6BV 35	8	8	1
Professional and Legal Issues for Interactive Media Developers	F6BY 35	8	8	1
Interactive Media: Graded Unit 2	H4LF 35*	16	8	2
Designing and Developing an Interactive Product	H2X8 35*	16	8	2
Sound and Vision for Interactivity	H31B 35*	8	8	1
Building an e-Business	F6JJ 34	8	7	1

\*Refer to History of Changes for revision changes.

## 5.2 Optional Units

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
<b>Web Development:</b>				
Game Customisation and Scripting	HH3E 35*	16	8	2
Website Design: Planning and Design	FW5C 34	1	7	1
Website Design: Multimedia Content Creation	FW5D 34	1	7	1
Website Design: Development Technologies	FW5E 34	1	7	
Web Development: Essential Content	F1YY 34	16	7	2
Web Development Complex Content	F200 34	16	7	2
Internet: Web Development Standards and Legislation	F1VX 34	8	7	1
Web Development Fundamentals	F203 34	8	7	1
Internet and Network Development Fundamentals	F204 34	8	7	1
Internetworking Concepts 1: Development and Delivery Concepts	DF9T 34	8	7	1
Internetworking Concepts 2: Security and Business Concepts	DF9V 34	8	7	1
Developing Rich Internet Applications	F6BN 35	16	8	2
Web Development: Producing a Data Driven Website	F6C4 35	8	8	1
Web Development: Website Optimisation	F6C5 35	8	8	1
Web Development: Dynamically Generated Content	F6C2 35	16	8	2
Web Server Platform	F6BM 35	16	8	2
Developing Mobile Web Based Applications: An Introduction	H17J 34	16	7	2
Digital Skills	H9DE 34*	8	7	1
<b>Audio Visual:</b>				
Digital Media: Audio	F20C 34	8	7	1
Digital Media: Video	H20D 34	8	7	1
Multimedia Computing: Audio and Video 1	DF66 34	16	7	2
Multimedia Computing: Audio and Video 2	DF67 35	16	8	2
<b>Graphics:</b>				
Digital Imaging: Vector Techniques	F208 34	8	7	1
Digital Imaging: Bitmap Techniques	F207 34	8	7	1
Digital Imaging: Advanced Bitmap Techniques	F6BS 35	16	8	2
Digital Imaging: Advanced Vector Techniques	F6BT 35	16	8	2
<b>Animation:</b>				
2D Animation	F209 34	16	7	2
Multimedia Computing: Animation 1	DF64 34	8	7	1
3D Modelling and Animation	DE2N 35	16	8	2
2D Digital Imaging and Animation	DE35 35	16	8	2

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
<b><i>Coding, Scripting, Programming:</i></b>				
Client Side Scripting for Web Applications	F1VW 34	16	7	2
Software Development: Introduction	DF6C 34	8	7	1
Software Development: Developing for the World Wide Web	D76P 35	16	8	2
Scripting for Interactivity	DE32 35	16	8	2
Self Describing Data (XML)	FM97 35*	8	8	1
Software Development: Programming Foundations	H17X 34	8	7	1
Software Development: Developing Small Scale Standalone Applications	H17W 34*	16	7	1
Developing Software: Introduction	H173 34*	8	7	1
<b><i>Database:</i></b>				
Manage Database Systems using SQL	F1VY 34	8	7	1
Data Analysis and Database Design	A6AH 34	8	7	1
<b><i>Creative:</i></b>				
Creative Industries: An Introduction	H4A1 34*	8	7	1
Digital Portfolio	F6JB 34		7	1
Writing for the Media	DH4F 34	8	7	1
Art and Design: Desktop Publishing and Layout	DV95 34	8	7	1
Interactive Fiction	DE2X 35	16	8	2
Narrative and Genre in Computer Games	F6BX 35	16	8	2
<b><i>e-Marketing:</i></b>				
Internet: Introducing e-commerce Or e-commerce: Introduction	DH39 34	8	7	1
	DV6F 34*	8	7	1
e-Marketing	DV6H 34	8	7	1
<b><i>IT &amp; Mathematics:</i></b>				
Mathematics for Interactive Computing: Fundamental Techniques	F20A 33	8	6	1
Mathematics for Interactive Computing: Essential Techniques	F20B 34	8	7	1
Information Technology: Application Software 1	D75X 34	8	7	1
<b><i>Entrepreneurship &amp; Personal Development::</i></b>				
Work Placement	HJ4W 34*	8	7	1
Personal Development Planning	DE3R 34	8	7	1
Entrepreneurship in the Creative Industries	DR0T 35	8	8	1

\*Refer to History of Changes for revision changes.



Unit title	Code	SCQF credit points	SCQF level	SQA credit value
<i>Additional Units:</i>				
Researching Multimedia Applications for Practical Re-delivery	DE31 34	8	7	1
Internet: Client Side Web Scripting	DF6P 35	8	8	1
Computer Arts and Design: Theory and Practice	FD65 35*	8	8	1
Developmental Drawing	DV96 34	8	7	1
Screen Based Design: An Introduction	DW9V 34	8	7	1
Web Design Project	DX5R 35	16	8	2
Film Studies for New Media	F1F0 35	8	8	1
Information Design	F1GT 35	8	8	1
Relational Database Management Systems	H16W 35*	16	8	2
SQL: Introduction	DH3J 34	8	7	1
Game Physics	F86H 35	16	8	2
3D Level Editing	F869 34	8	8	1
Project Management 1	DM30 35	8	8	1
Web Design: An Introduction	DV5M 34	8	7	1
System Development: Object Oriented Design	DM3H 35	16	8	2
Systems Development: Object Oriented Analysis and Design	H172 35*	16	8	2
Mobile Technology	H17R 35*	8	8	1
Professional Career Development in the IT Industry	HG1K 34	8	7	1
Local Option	n/a		7 or 8	4

\*Refer to History of Changes for revision changes.

### 5.3 Mapping information

The HND Interactive Media Award has been developed as a replacement for three existing frameworks devised locally by centres during 2003, namely:

G7A6 16: HND Interactive Multimedia Creation  
 G7DD 15: HNC Multimedia Computing: Web Development  
 G7DF 16: HND Multimedia Computing

It is possible that candidates may hold Units which, although not identical to those in this award may have equivalency.

Where a candidate has achieved an equivalent Unit prior to commencing the HND Interactive Media Award, they can be given credit transfer for the equivalent Unit. A credit transfer mapping document has been produced to formalise this process and is contained within **Appendix 3**.

To ensure that the candidate's skills, knowledge and understanding are current, it is recommended that any candidate being considered for credit transfer is asked to demonstrate how they have maintained their currency within the topic area.

Centres have the responsibility to ensure that appropriate credit is given.

## 5.4 Articulation, professional recognition and credit transfer

Over the past four years, closer working relationships between Scottish Colleges and Universities have provided students with progression and articulation opportunities within the multimedia sector.

Initially it was envisaged that the HND Award could be designed in such a way as to secure a national agreement regarding progression and articulation. Subsequent discussion, however, highlighted difficulties relating to this approach as each University delivers uniquely designed awards, making it impossible within the scope of this activity to arrive at a common set of entry requirements suiting each course. It was also noted that many Universities are currently in the process of reviewing and updating their provision.

With this in mind the approach taken, in line with other HN Awards, was to develop a central core of mandatory Units addressing the common competencies identified, with a list of optional Units from which centres can construct a tailored award best suited to their articulation requirements. For guidance, a recommended delivery framework has been provided, giving details of optional Units and sequencing for centres further within this Arrangements Document.

The award has therefore been designed to allow students to progress to Degree level study. Several Universities have confirmed that, in principle, learners who achieve the **HND Interactive Media** Award will be suitable for direct entry into either year two or year three of their Interactive Media related courses

Based on Institution progression statistics, it was clear that there was an appreciable increase in students obtaining direct entry to Degree courses, either at year two or three. There is a common consensus amongst all stakeholders that this trend will continue to rise within the foreseeable future.

Currently articulation paths exist with five Scottish Universities:

University of Abertay, Dundee  
Robert Gordon University  
University of the West of Scotland  
Glasgow Caledonian University  
\*Napier University

Covering the following relating Interactive Media degree courses:

Bsc (Hons) Web Design & Development  
BA (Hons) Visual Communication & Media Design  
BSc (Hons) Multimedia Development, BSc (Hons)  
Multimedia Technology, BSc (Hons)  
Web Development, BSc Multimedia Technology  
BSc Interactive Media Creation  
BSc Interactive Media Development  
BSc/BSc (Hons) Multimedia Technology  
\*BSc Web Design and Development (*Direct entry into stage 3 (level 9)  
with a sufficient pass mark in Graded Unit*)  
\*BSc Interactive Media Design (*Direct entry into stage 3 (level 9)  
with a sufficient pass mark in Graded Unit*)

## 6 Approaches to delivery and assessment

### 6.1 Context and content

The HND Interactive Media award is designed for candidates who seek employment within the Interactive Media Industry or organisations that develop or utilise Interactive Media to enhance their business goals. The award focuses on providing a balance between developing candidate's contemporary vocational skills and the underpinning knowledge required to apply them to the relevant organisational environment. The award also prepares candidates for progression to higher education programmes within a related area.

A significant amount of care has gone into the Unit contents and the assessment of candidate knowledge and skills. To this end, Units have been specifically designed to complement each other whilst, at the same time, eliminating overlap of content across Units. Further guidance on holistic assessment can be found within the appropriate Units.

The award has been developed giving due cognisance to the guidance given by the sector skills council and the recommendations of industrial advisers. The mandatory section seeks to provide a balance between the development of contemporary vocational skills and the relevant underpinning knowledge relating to User Interface Design, Composition, Graphics, Planning, Legal and Technology issues. The mandatory section also develops competency in a range of Core Skills. The *Interactive Media: Graded Unit 2* project develops the candidate's knowledge and skills in planning, analysis and synthesis.

The optional section of the award framework provides candidates with a choice to follow a Web Development or Digital Content Creation path, with a view to specialisation within employment or further study. Degree courses have been identified to which successful candidates can articulate to second or third year entry. The framework comprises Units at SCQF levels 6, 7 and 8. Centres must ensure that the conditions of the award are met when choosing optional Units.

The award is designed to be delivered through full-time and part-time study, allowing candidates the opportunity to interact and work within a centre-based environment where interpersonal and communication skills can be informally developed. In addition to the informal interaction, formal opportunities to work with clients and professionals can be effectively created through the inclusion of the Graded Unit 2, which employs a project approach to learning and assessment.

## 6.2 Sequence of delivery

The order in which Units within the award are delivered is at the discretion of the centre and should be appropriate to local staffing and timetabling considerations. The following delivery sequence is offered for **guidance only**. Where the award is being delivered on a part-time basis, the subjects recommended for the first semester within the full-time model of delivery should be delivered in the first academic session of the part-time delivery. Subjects recommended for semester two delivery in the full-time model should be delivered in the second academic session of the part-time delivery model.

### Mandatory Units

It is recommended that the SCQF level 7 mandatory Units are delivered during the first academic year of the award. This would benefit candidates who decide to exit the award after year one and provides an increased opportunity for them to achieve the award of **HNC Interactive Media**, subject to the necessary optional Units being achieved and payment of the appropriate SQA award fee.

The SCQF level 7 mandatory Units also provide the required underpinnings for progression on to the SCQF level 8 mandatory Units during the following academic year.

**During year one**, it is recommended that *F1VS 34: Interactive Media: Planning* be delivered in conjunction with or prior to *F1VT 34: Interactive Media: Authoring* as these Units offer opportunities for integration.

It is also recommended that *F1VV 34: User Interface Design* and *FIYX 34: Digital Imaging: Bitmap and Vector* are delivered early since they form much of the underpinning knowledge and skills content for later Units.

*DH21 34: Working within a Project Team* is best taught later to allow candidates to assimilate the knowledge and skills to be able to make a useful contribution to a group project.

*F21G 34: Interactive Media: Graded Unit 1* should be undertaken as late as possible allowing time for re-assessment and to allow the Units which contribute to the Graded Unit to be completed.

**During year two**, it is recommended that *F6BV 35: Human Computer Interface* is delivered early within the term as it builds upon the skills and knowledge introduced within *F1VV 34: User Interface Design* and a lengthy gap between Units may be counterproductive.

*F6V5 35: Designing and Developing an Interactive Product* may also be delivered earlier within the term in conjunction with *F1W0 34: Project Management for IT* as there may be opportunities for the integrated development of knowledge and skills and contributes to *F6V6 35/FP25 35: Interactive Media: Graded Unit 2*.

F6BW 35/FW2V 35: Interactive Media Composition should be delivered early as it contributes to F6V6 35/FP25 35: Interactive Media: Graded Unit 2.

F6JJ 34: Building an e-Business should be delivered early as it contributes to F6V6 35/FP25 35: Interactive Media: Graded Unit 2.

*F6V6 35/FP25 35: Interactive Media: Graded Unit 2* should be delivered later within the term to allow the Units which contribute to be completed.

#### Suggested delivery schedule

The following delivery sequences are provided for guidance only. It is assumed that delivery of the award takes place over a two year period with two blocks per year.

The award may be tailored towards:

- Web Development (Option A)
- Digital Content Creation (Option B)
- Or a mixture of both (Option C)

## Option A — Delivery sequence for a Web Development focused award

Year 1				
Code	Unit title	Credit value	SCQF level	Mandatory/optional
<b>Block One</b>				
F1VS 34	Interactive Media: Planning	1	7	M
F1VT 34	Interactive Media: Authoring	2	7	M
F1VV 34	User Interface Design	1	7	M
F1YX 34	Digital Imaging: Bitmap and Vector	1	7	M
F204 34	Internet and Network Development Fundamentals	1	7	O
DE3R 34	Personal Development Planning	1	7	O
F203 34	Web Development Fundamentals	1	7	O
<b>Block Two</b>				
DH21 34	Working Within a Project Team	1	7	M
F21G 34	Interactive Media: Graded Unit 1	1	7	M
F1VW 34	Client Side Scripting for Web Applications	2	7	O
F209 34	2D Animation	2	7	O
F1VY 34	Managing Database Systems Using SQL	1	7	O
Year 2				
Code	Unit title	Credit value	SCQF level	Mandatory/optional
<b>Block One</b>				
F6BV 35	Human Computer Interface	1	8	M
F1W0 34	Project Management for IT	1	7	M
H2X8 35*	Designing and Developing an Interactive Product	2	8	M
FW2V 35*	Interactive Media Composition	1	8	M
H31B 35*	Sound and Vision for Interactivity	1	8	M
F6C2 35	Web Development: Dynamically Generated Content	2	8	O
<b>Block Two</b>				
FP25 35*	Interactive Media: Graded Unit 2	2	8	M
F6BY 35	Professional and Legal Issues for Interactive Media Developers	1	8	M
F6BN 35	Developing Rich Internet Applications	2	8	O
F6JJ 34	Building an e-Business	1	7	M
FM97 35*	Self Describing Data (XML)	1	8	O

\*Refer to History of Changes for revision changes.

**Option B — Delivery sequence for a Digital Content Creation focused award**

Year 1				
Code	Unit title	Credit value	SCQF level	Mandatory/ optional
<b>Block One</b>				
F1VS 34	Interactive Media: Planning	1	7	M
F1VT 34	Interactive Media: Authoring	2	7	M
F1VV 34	User Interface Design	1	7	M
F1YX 34	Digital Imaging: Bitmap and Vector	1	7	M
DV95 34	Art and Design: Desktop Publishing and Layout	1	7	O
F209 34	2D Animation	2	7	O
<b>Block Two</b>				
DH21 34	Working Within a Project Team	1	7	M
F21G 34	Interactive Media: Graded Unit 1	1	7	M
F207 34	Digital Imaging: Bitmap Techniques	1	7	O
DE3R 34	Personal Development Planning	1	7	O
F6BT 35	Digital Imaging: Advanced Vector Techniques	1	8	O
F6C4 35	Web Development: Producing a Data Driven Website	1	8	O

Year 2				
Code	Unit title	Credit value	SCQF level	Mandatory/ optional
<b>Block One</b>				
F6BV 35	Human Computer Interface	1	8	M
F1W0 34	Project Management for IT	1	7	M
H2X8 35*	Designing and Developing an Interactive Product	2	8	M
FW2V 35*	Interactive Media Composition	1	8	M
H31B 35*	Sound & Vision for Interactivity	1	8	M
DF67 35	Multimedia Computing: Audio and Video 2	2	8	O
<b>Block Two</b>				
FP25 35*	Interactive Media: Graded Unit 2	2	8	M
F6BY 35	Professional and Legal Issues for Interactive Media Developers	1	8	M
F6BS 35	Digital Imaging: Advanced Bitmap Techniques	1	8	O
F6JJ 34	Building an e-Business	1	7	M
F6JB 34	Digital Portfolio	1	7	O

\*Refer to History of Changes for revision changes.



## Option C — Delivery sequence for a Multi-skilled Interactive Media award

Year 1				
Code	Unit title	Credit value	SCQF level	Mandatory/ optional
<b>Block One</b>				
F1VS 34	Interactive Media: Planning	1	7	M
F1VT 34	Interactive Media: Authoring	2	7	M
F1VV 34	User Interface Design	1	7	M
F1YX 34	Digital Imaging: Bitmap and Vector	1	7	M
F207 34	Digital Imaging: Bitmap Techniques	1	7	O
F209 34	2D Animation	2	7	O
<b>Block Two</b>				
DH21 34	Working Within a Project Team	1	7	M
F21G 34	Interactive Media: Graded Unit 1	1	7	M
D75X 34	Information Technology: Application Software 1	1	7	O
DE3R 34	Personal Development Planning	1	7	O
DE2N 35	3D Modelling and Animation	2	8	O
F6C4 35	Web Development: Producing a Data Driven Website	1	8	O

Year 2				
Code	Unit title	Credit value	SCQF level	Mandatory/ optional
<b>Block One</b>				
F6BV 35	Human Computer Interface	1	8	M
F1W0 34	Project Management for IT	1	7	M
H2X8 35*	Designing and Developing an Interactive Product	2	8	M
FW2V 35*	Interactive Media Composition	1	8	M
H31B 35*	Sound and Vision for Interactivity	1	8	M
DF67 35	Multimedia Computing: Audio and Video 2	2	8	O
<b>Block Two</b>				
FP25 35*	Interactive Media: Graded Unit 2	2	8	M
DF6A 35	Professional and Legal Issues for Interactive Media Developers	1	8	M
F6BS 35	Digital Imaging: Advanced Bitmap Techniques	1	8	O
F6JJ 34	Building an e-Business	1	7	M
F6JB 34	Digital Portfolio	1	7	O

\*Refer to History of Changes for revision changes.

### 6.3 Assessment strategy

Where possible, Units maintain a technology neutral philosophy to ensure that they may be delivered using a variety of current technologies and should be contextualised during delivery to reflect current themes and practices. Candidates should be encouraged to apply their knowledge to practical, real-life scenarios and to reflect positively upon their achievements in a manner that promotes self improvement.

There are a variety of assessment strategies adopted depending upon the nature of the skills and knowledge the Unit seeks to develop. This range provides a balanced experience for candidates, ensuring that there is not over-reliance on one specific assessment approach. Methods include: case studies; oral presentations; portfolios; projects; research; and examinations. This gives a healthy mix of assessment approaches which foster skill development, transference, critical and creative thinking and promote vocational ability.

The content of some of the Units may be delivered using vendor-supplied materials, available through the Digital Vendor Alliance (DIVA) project. These may include Microsoft, Adobe, Avid or CIW. As these materials are under continuous development, centres should check carefully to ensure that such materials meet all the requirements for the Unit. If vendor-supplied materials are used, some of the practical tasks involved may contribute towards the practical assessments required for the unit.

#### Project and Portfolio Assessment

There is substantial evidence to support the belief that the use of portfolios as a means of assessment can contextualise learning and actively involve learners in the process of assessment. Academic research suggests that students improve in their awareness of what they know, what they are learning and the areas that need improvement more effectively through portfolio-based activity. Learners may also improve how they interact effectively with lecturers and clients to gain a fuller picture of their own achievements and progress.

Industry feedback has indicated that one of the methods used to judge candidate suitability for employment is to look at the extent and quality of their work. In appreciation of these points, the QDT felt that it was desirable for students to be able to evidence the variety of skills and knowledge developed throughout the award by compiling a portfolio of completed work. A significant amount of Units, therefore, use projects or products as a means of assessment.

## Assessment Exemplars

Centres will have access to Assessment Exemplars for each of the core Units. These will provide additional Guidelines for Delivery and examples of assessment instruments and suitable candidate submissions to indicate the national standard of achievement required at the appropriate SCQF level. Currently Assessment Exemplars have been developed for the following Units:

F1VW 34: Client Side Scripting for Web Applications  
F1YX 34: Digital Imaging: Bitmap and Vector  
F20C 34: Digital Media: Audio  
F20D 34: Digital Media: Video  
F1VT 34: Interactive Media: Authoring  
F21G 34: Interactive Media: Graded Unit 1  
F1VS 34: Interactive Media: Planning  
F1VX 34: Internet: Web Development Standards and Legislation  
F1VY 34: Manage Database Systems Using SQL  
F1W0 34: Project Management for IT  
F1VV 34: User Interface Design  
F1CB 35: Web Development Essential Content

The development of further Assessment Exemplars covering the additional mandatory Units within the HND Interactive Media award will commence in the near future.

## 6.4 E-Assessment

The design approach for almost all of the SCQF level 7 Units has been to facilitate evidence of knowledge and skills of key concepts and techniques through objective testing. This approach also facilitates the use of on-line assessment (e-assessment) and centres are encouraged to adopt this approach wherever possible.

At least one Outcome from each of the following Units has been written to accommodate objective testing through e-assessment:

F1VV 34: User Interface Design  
F1YX 34: Digital Imaging: Bitmap and Vector  
F207 34: Digital Imaging: Bitmap Techniques  
F208 34: Digital Imaging: Vector Techniques  
F1YY 34: Web Development Essential Content  
F200 34: Web Development Complex Content  
F1VX 34: Internet: Web Development Standards and Legislation  
F1VW 34: Client Side Scripting for Web Applications  
F1VY 34: Managing Database Systems using SQL  
F1W0 34: Project Management for IT  
F209 34: 2D Animation  
F203 34: Web Development Fundamentals  
F204 34: Internet and Network Development Fundamentals

## 6.5 Core Skills

The Qualification Design Team considered it appropriate to recommend the Core Skills entry and exit levels detailed, taking into consideration the requirements of employers and for progression to further study.

These requirements were addressed by embedding the exit Core Skills profile within the mandatory Units, providing candidates who complete the mandatory Units with automatic certification.

Further opportunities for candidates to develop their Core Skills profile are sign-posted within the optional Units.

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.

Given the exit level of Core Skills from the preceding HNC Interactive Media award, which is already almost exclusively at higher level, any further enhancement gained at this level would not be recognised, apart from developing a better-prepared candidate ready to enter employment. The single exception to this is the Core Skill of *Numeracy*. It is recognised that some sectors of the interactive media industry and higher education institutions, particularly those related to the computer gaming sector, require candidates with strong numeracy skills. To address this, candidates have the opportunity to develop the Core Skill of *Numeracy* to higher level by undertaking the optional Units:

F20A 33: Mathematics for Interactive Computing: Fundamental Techniques

F20B 34: Mathematics for Interactive Computing: Essential Techniques

Table 9 — Core Skill Entry and Exit Profiles

Core skill	Entry profile SCQF level	Exit profile SCQF level	Carrier unit
<b>Communication (Full)</b>	5	6	DH21 34 Working within a Project Team
Oral Communication	5	6	DH21 34 Working within a Project Team
Written Communication	5	6	DH21 34 Working within a Project Team
<b>Numeracy (Full)</b>	4	4	-
Using Graphical Information	4	4	-
Using Number	4	4	-
<b>Information Communication Technology (Full)</b>	5	6	-

Table 9 — Core Skill Entry and Exit Profiles (cont)

Core skill	Entry profile SCQF level	Exit profile SCQF level	Carrier unit
<b>Problem Solving (Full)</b>	5	6	F6V5 35 Designing and Developing an Interactive Media Product FP25 35 Interactive Media: Graded Unit 2
Critical Thinking	5	6	F1VS 34 Interactive Media: Planning F6BY 35 Professional and Legal Issues for Interactive Media Developers F6V6 35 Interactive Media: Graded Unit 2
Planning & Organising	5	6	-
Reviewing & Evaluating	5	6	-
<b>Working with Others (Full)</b>	5	6	DH21 34 Working within a Project Team

Numeracy: Candidates wishing to gain Numeracy at Higher level can achieve this by completing the optional Units F20A 34: Mathematics for Interactive Media: Fundamental Techniques or F20B 34: Mathematics for Interactive Computing: Essential Techniques

Working with Others: This Core Skill is embedded within the mandatory Unit *DH21 34: Working within a Project Team*.

Communication: This Core Skill is embedded within the mandatory Unit *DH21 34: Working within a Project Team*.

Information and Communication Technology: There are opportunities to develop the Core Skill of IT within F6BW 35/FW2V 35 Interactive Media Composition. It is also available within the optional Unit *D75X 34: Information Technology: Applications Software 1*.

Problem Solving: This Core Skill is embedded within the Unit *F6V5 35: Designing and Developing an Interactive Media Product* and *FP25 35 Interactive Media: Graded Unit 2*.

Opportunities to achieve Core Skills are also signposted within additional mandatory and optional Units within this framework.

## 6.6 Graded Unit Summary

There are two types of assessment which can be used for Graded Units: a project or an examination. The **HND Interactive Media** Award incorporates both an Examination intended to be delivered in Year 1 (**HNC**) and a Project-based Graded Unit intended to be delivered in Year 2 (**HND**). They are specific to this award and reflect the aims and objectives.

As a mandatory part of the **HNC Interactive Media**, candidates undertake a single credit examination based Graded Unit, at SCQF level 7. This decision was taken following considerable consultation with stakeholders during the development of the award framework during 2007. This Graded Unit requires that the candidate undertake a three hour closed-book written examination.

At HND level there was a unanimous decision to incorporate a project-based; two credit Unit at SCQF level 8. This design decision was supported by stakeholders from both industry and education. A unique approach has been taken to the construction of the Unit, allowing centres to choose between an individual or collaborative project involving three stages: Planning, Developing, and Evaluating. Candidates will gather information to supplement a supplied case or development brief, produce an outline plan of how to solve the problem, manage the development process, design and implement a solution, and evaluate their work. The Core Skill, *Problem Solving* at higher, will be embedded in this unit.

How the graded Units integrate the principal aims of the award

The purpose of this Graded Unit is to assess the candidate's ability to integrate and apply the knowledge and/or skills gained in individual Units, to demonstrate that they have both achieved the aims of the award, and to grade candidate achievement.

HND Interactive Media: Graded Unit 1

Within the mandatory section of the award, candidates undertake a significant amount of project work, including a group project within year one. A primary aim of this award at this stage is to provide progression to further study and representatives from Higher Education were unanimous in their preference for an examination providing a good preparation for undergraduate study.

In addition, the Sector Skills Council (ie SkillSet) has stated a preference for an examination to be included, providing experience of the testing environment of industry-standard awards. However, it is also recognised that centres and candidates expressed a preference for a project-based Graded Unit in response to a specific question in the survey. On balance, given the level of project work and the opportunities for candidates to compile a portfolio of work, the QDT made the decision to incorporate an examination.

This Graded Unit covers the following mandatory Units:

F1VV 34: User Interface Design

F1VS 34: Interactive Media: Planning

F1YX 34: Digital Imaging: Bitmap and Vector

The instrument of assessment for this Graded Unit will be unseen and closed book with the assessment being conducted in controlled and invigilated conditions. It will consist of two 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.

HND Interactive Media: Graded Unit 2

The newly developed Graded Unit 2 is unique to the Interactive Media Award and provides candidates with the opportunity to enhance their skills and combine their knowledge from Units within the award framework, by undertaking either an individual or group project to produce an interactive product. The Unit is designed to provide evidence that the candidate has achieved the following principal aims of the HND Interactive Media:

- to develop candidate knowledge and skills, such as planning, analysing and synthesising
- to develop employment skills and enhance candidate employment prospects
- to develop progression within the Scottish Credit and Qualifications Framework
- to develop study and research skills
- to offer an up-to-date award that reflects recent development in the interactive multimedia sector and enables candidates to gain skills that are in demand in the workplace
- to develop enduring vocational skills and specialist knowledge rather than transient, software or platform specific
- to promote collaborative and individual enterprise
- to promote achievement and skills development through 'evidence by product'

Both Graded Units provide the opportunity for candidates to receive a performance grade of A, B or C which has previously proven popular with students.

## 7 General information for centres

### Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

### Internal and external verification

All instruments of assessment used within this/these Group Award(s) should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

Further information on internal and external verification can be found in *SQA's Guide to Assessment and Quality Assurance for Colleges of Further Education* ([www.sqa.org.uk](http://www.sqa.org.uk)).

## 8 General information for candidates

Interactive Media is a dynamic and exciting field drawn from the strength and popularity of multimedia, allied to the exciting use of new technologies to provide richer, more interactive experiences for multimedia users. The once separate disciplines of graphic design, computer programming, telecommunications, audio/visual and media production have converged, creating a whole new multimedia industry. Developments in affordable technology, such as mobile devices, wireless internet, high speed digital communications and video on demand have meant that this new industry continues to evolve and today the focus has shifted from Multimedia to Interactive Media.

Interactive Media covers a broad spectrum of interests ranging from interactive entertainment, gaming, education, animation, publishing, computer systems design, audio and video production, graphic design, the internet and broadcast technologies. Scotland has a rich tradition of innovation and enterprise within this sector which has enjoyed considerable recent expansion including a number of world-class computer games developers.

This HND is a gateway towards a career within this area, with opportunities to develop skills in creative disciplines such as sound and vision, animation, graphic development and more technical areas such as interface design, dynamically driven web sites, and rich internet applications. The course has been carefully crafted to match the National Occupational Standards identified for the Interactive Media sector and, as such, prepares the candidate for a career, initially at a junior level, within the Interactive media industries. As this industry develops, new opportunities will doubtless arise but, at the time of writing, possibilities exist within Web Development, Digital Content Creation and aspects of Game Development.



This award also maximises opportunities for successful candidates to progress from HND to Degree level study with many Scottish Universities providing direct entry into year three of their interactive media or web development related courses. Several Colleges may also be able to offer the prospect for successful candidates to undertake degree level study through collaboration with the University sector.

Since its introduction a few years ago, the World Wide Web has developed from a scientific curiosity into one of the main forms of human communication media, transforming from a collection of plain text pages to the complex dynamic sites that we are familiar with today. The Web development skills embedded within this course will allow the candidate to create digital content, implement complex internet-based applications, develop electronic business solutions and establish social networking sites. To do this, the candidate will use industry-standard software and learn contemporary skills and technologies.

Digital Content Creation focuses upon the creation and modification of digital content, such as animation, audio, graphics, images or video, as part of the production process before presentation in its final medium. This large field encompasses many activities such as 2D and 3D graphics, audio and video editing, compositing and visual design.

Mobile and computer games continue to be one of the main forms of Interactive media and appear set to remain so for the foreseeable future. The range of skills, which candidates will develop throughout this course, can be put to use within this field, particularly within the areas of content creation, project management and interaction design.

Practical project-based activities form a large part of the work that candidates will undertake throughout this course. They will spend significant amounts of time designing and building products using a variety of technologies from the major industry leaders such as Microsoft, Adobe, Autodesk and Avid, to meet user requirements and to develop creative solutions to address client briefs.

There are seventeen credits worth of mandatory Units within the framework which every candidate must undertake. These cover topics such as planning, authoring, creating digital images, building user interfaces, developing dynamically-driven websites, creating interactive products, applying digital composition techniques, and producing interactive sound and vision solutions. The specialist skills and knowledge developed throughout these Units have been identified as highly desirable by employers.

Each unit is designed to develop the candidate's understanding of how contemporary technologies are used to create interactive media applications such as web sites, games, mobile and CD/DVD based interactive media. They will learn how to plan, design and develop their own interactive media solutions by undertaking a variety of practical work and projects both on their own and as a member of a team.

Practical activities will be assessed through a scenario or brief from which the candidate will be required to provide a creative software solution. An assessor will use checklists and/or evaluation forms to record their progress and the candidate will receive advice from their tutor and feedback regarding their progress. This will help them to reflect upon their performance and improve their accomplishments. The Units are designed to develop the candidate's underpinning knowledge and vocational skills and promote competency and practical ability.

During the first year of study, the candidate will undertake a short examination which will allow them to demonstrate their understanding of the subjects covered. Upon successful achievement, they will be awarded an A, B or C grade which is shown on their final award transcript.

They will learn the techniques and software tools to plan and manage successful projects and have the opportunity to collaborate on a group project with other students.

During the second year of study, they will have the opportunity to demonstrate their ability to consolidate their skills and knowledge by undertaking a complex project within a real world or simulated environment. Again the candidate will be able to achieve an A, B or C grade which will be shown on their final award transcript. In addition to the mandatory Units, centres will deliver a further 13 credits worth of Units from a list of options contained within the award framework. The centre will advise the candidate of the choice prior to the commencement of their course. The centre's choice will provide the candidate with the opportunity to develop specific skills and knowledge relating to Web Development, Digital Media Creation or a combination of both.

To achieve the award of Higher National Diploma in Interactive Media, the candidate must pass all of thirteen mandatory Units worth 17 credits and another 13 credits worth of Units chosen by the centre from the optional list contained within this framework.

In addition to specialist skills and knowledge developed during this award, the candidate will learn how to analyse and solve problems, communicate more effectively, use information technology, and work with others. These skills are called Core Skills and are in great demand by employers. By completing this award, the candidate will receive a Core Skills profile showing the level of each of the five Core Skills that they have attained.

SQA is committed to promoting diversity and practising equality of opportunity. As a service provider, SQA aims to promote equality of access to SQA qualifications. We will seek to ensure that our qualifications are free from real or perceived barriers to learning and that they offer candidates an equal opportunity to achieve their full potential.

## 9 Glossary of terms

**SCQF:** This stands for the Scottish Credit and Qualification Framework, which is a new way of speaking about qualifications and how they inter-relate. We use SCQF terminology throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at [www.scqf.org.uk](http://www.scqf.org.uk)

**SCQF credit points:** One HN credit is equivalent to 8 SCQF credit points. This applies to all HN Units, irrespective of their level.

**SCQF levels:** The SCQF covers 12 levels of learning. HN Units will normally be at levels 6–9. Graded Units will be at level 7 and 8.

**Subject Unit:** Subject Units contain vocational/subject content and are designed to test a specific set of knowledge and skills.

**Graded Unit:** Graded Units assess candidates' ability to integrate what they have learned while working towards the Units of the Group Award. Their purpose is to add value to the Group Award, making it more than the sum of its parts, and to encourage candidates to retain and adapt their skills and knowledge.

**Dedicated Unit to cover Core Skills:** This is a non-subject Unit that is written to cover one or more particular Core Skills.

**Embedded Core Skills:** This is where the development of a Core Skill is incorporated into the Unit and where the Unit assessment also covers the requirements of Core Skill assessment at a particular level.

**Signposted Core Skills:** This refers to the opportunities to develop a particular Core Skill at a specified level that lie outwith automatic certification.

**Qualification Design Team:** The QDT works in conjunction with a Qualification Manager/Development Manager to steer the development of the HNC/HND from its inception/revision through to validation. The group is made up of key stakeholders representing the interests of centres, employers, universities and other relevant organisations.

**Consortium-devised HNCs and HNDs** are those developments or revisions undertaken by a group of centres in partnership with SQA.

**Specialist single centre and specialist collaborative devised HNCs and HNDs** are those developments or revisions led by a single centre or small group of centres who provide knowledge and skills in a specialist area. Like consortium-devised HNCs and HNDs, these developments or revisions will also be supported by SQA.

## **10 Appendices**

Appendix 1: National Occupational Standards mapping

Appendix 2: Professional Development Awards and Vendor Certification

Appendix 3: Credit transfer documentation

## Appendix 1: National Occupational Standards mapping

The Performance Statements in Skillset's National Occupational Standards are analogous to the knowledge and skills contained in HN Units. The tables below show the mapping of the knowledge and skills to Performance Statements contained in the Interactive Media elements (IM):

<b>IM1 Work Effectively In Interactive Media</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 5, 7, 8 1, 5, 7, 8, 9, 11 11	Working with Others Interactive Media: Graded Unit 2 Professional and Legal Issues for Interactive Media Developers	1, 2, 3 1 all

<b>IM2 Obtain Assets for Use in Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 7, 8 1, 2	Digital Images: Bitmap and Vector Interactive Media Composition Designing and Developing an Interactive Product	1 1, 2, 3 2

<b>IM3 Prepare Assets for Use in Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 8 1 8	Digital Images: Bitmap and Vector Multimedia Computing Audio and Video 1 Multimedia Computing Audio and Video 2 Sound and Vision for Interactivity	1, 2 3 3

<b>IM4 Prepare User Interface Assets for Use in Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3 2, 3, 4 1, 2, 3, 4, 5 7	Digital Images: Bitmap and Vector Development Complex Content User Interface Design Sound and Vision for Interactivity	1 3

<b>IM5 Design User Interfaces for Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 5 6, 7, 8, 9, 10	User Interface Design Human Computer Interface	1, 3

<b>IM6 Use Authoring Tools to Create Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 5, 6, 8 1, 3, 4 1, 2, 3, 8 1, 2, 3, 4, 5, 8	Interactive Media: Authoring Scripting for Interactivity Designing and Developing an Interactive Product Web Development Complex Content	1, 2, 3, 4, 5 1, 2, 4

### Appendix 1: National Occupational Standards mapping (cont)

<b>IM7 Code Scripts to Provide Functionality for Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 5	Client Side Scripting for Web Apps Developing for the WWW Scripting for Interactivity Web Development: Dynamically Generated Content	2, 3
1, 2, 3, 4, 5		
1, 2, 3, 4, 5		
1, 2, 3, 4, 5		

<b>IM8 Determine the Implementation of Designs for Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1	Interactive Media: Planning Interactive Media: Grade Unit 2 Designing and Developing an Interactive Product	1
1, 2, 4, 5, 6, 7, 8		
2, 3, 4, 5, 6		

<b>IM10 Initiate Interactive Media Projects</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1	Interactive Media: Planning Interactive Media: Grade Unit 2	1
1, 2, 3, 4, 6, 7		

<b>IM12 Devise User Testing of Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 4	Interactive Media: Planning	3
1, 2, 3	Interactive Media Authoring	3
1, 3, 5	Human Computer Interface	

<b>IM13 Conduct User Testing Of Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4	Interactive Media: Planning	3
1, 2, 3, 4	Interactive Media Authoring	3

<b>IM16 Plan Content for Web and Multimedia Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
6	Web Development Essential Content Narrative and Genre in Computer Games Interactive Fiction	3
1, 4, 5		
1, 3, 4, 5		

<b>IM17 Architect Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1	Interactive Media: Planning Web Development Essential Content Designing and Developing an Interactive product	1
3		5
1, 2, 3, 5, 7		

### Appendix 1: National Occupational Standards mapping (cont)

<b>IM18 Use Mark-up in Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3	Web Development Essential Content	3, 4
1, 2, 3, 4, 5	Web Development: Website Optimisation	

<b>IM19 Use Stylesheets in Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3	Web Development Complex Content	3, 5

<b>IM23 Create Narrative Scripts for Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
1, 2, 3, 4, 5	Narrative and Genre in Computer Games	
1, 2, 3, 4	Interactive Fiction	

<b>IM24 Create 2D Animations for Interactive Media Products</b>		
<b>Performance Statement</b>	<b>HN Unit</b>	<b>Outcome</b>
3, 5	2D animation	2, 3, 4
1, 2, 5	2D Digital Imaging and Animation	

## Appendix 2: Professional Development Awards and Vendor Certification

SQA currently offers a number of professional development awards in Computing and IT. The **HND Interactive Media** award incorporates opportunities to deliver three PDA awards:

*G904 47: Digital Imaging at SCQF level 7*

*G903 47: Web Development Group Award at SCQF level 7*

*G902 47: Web Technologies: Fundamentals at SCQF level 7*

Additionally, there are two Units which, when combined, present all of the knowledge and skills for the CompTIA INET+ qualification, providing a firm foundation for candidates to attempt the vendor examination. Comprehensive guidance in relation to these awards is given within the related Arrangement Documents; however a summary is given below:

*G904 47: Digital Imaging at SCQF level 7:* this PDA consists of two Units, namely:

*F1YX 34: Digital Imaging: Bitmap and Vector*

*F207 34: Digital Imaging: Bitmap Techniques*

The PDA is mapped to Adobe Certified curriculum (current May 2008) which should prepare an HN candidate to the level required to undertake the associated vendor certified examination(s), however, a centre can deliver this in a generic way working out-with vendor mapping.

*G903 47: Web Development Group Award at SCQF level 7:* this PDA consists of two Units, namely:

*F1YY 34: Web Development: Essential Content*

*F200 34: Web Development: Complex Content*

The PDA is mapped to Adobe curriculum in Dreamweaver (current May 2008). This means that, by successfully completing the Units using Adobe Dreamweaver software, candidates should be prepared to undertake the Adobe professional examination.

*G902 47 Web Technologies: Fundamentals at SCQF level 7:* this PDA consists of two Units, namely:

*F203 34: Website Development Fundamentals*

*F204 34: Internet and Network Technology Fundamentals*

There is no professional recognition mapped to this award apart from the opportunity to undertake the CIW (Certified Internet Webmaster) vendor syllabus (current May 2008).

Automatic accreditation of the PDAs above can also be awarded to candidates who have successfully achieved the relevant Units within each award. It is at the discretion of the Centre as to whether candidates eligible for automatic accreditation are entered for the Group Award in order to be certified.



## Appendix 3: Credit transfer documentation

Guidance on Credit Transfer for HNCs and HNDs in Interactive Media/Multimedia  
HNC Interactive Media was validated by SQA in October 2007 and HND Interactive Media was validated February 2009. These courses will replace a number of older Group Awards including:

*G7A5 15: HNC Interactive Multimedia Creation*

*G7A6 16: HND Interactive Multimedia Creation*

*G7DD 15: HNC Multimedia Computing: Web Development*

*G7DE 16: HND Multimedia Computing: Web Development*

*G7DF 16: HND Multimedia Computing*

These Group Awards have been available since December 2003 and themselves replaced older awards, dating back to the mid 1990s.

When new Group Awards are introduced, students often wish to transfer between the old and the new frameworks. For example, they may have started on an HNC under an older framework and wish to complete their HND on the new framework, or they may have completed Units some time ago and wish to use these as part of an HNC or HND under the new framework.

To assist in this process, SQA normally provides centres with guidance on Credit Transfer between the old and the new frameworks. SQA have 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:

The syllabuses have the same SCQF levels.

The syllabuses have the similar credit values (or equivalent).

The syllabuses are equivalent in terms of Core Skill coverage.

The syllabuses relate to the same subject area and the main topics are common to both.

The syllabuses present a similar level of cognitive demand.

The syllabuses encompass similar skill-sets.

The syllabuses are contemporary in terms of terminology, techniques and technology.

Employers, admission officers and other users would perceive both syllabuses as broadly equivalent.

The assessment demands are similar in terms of candidate activity and performance criteria, or candidates would be equally likely to pass both assessments.

Special conditions (where they exist) are applicable to both syllabuses.

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.

### Appendix 3: Credit transfer documentation (cont)

HND INTERACTIVE MEDIA CREATION				HND INTERACTIVE MEDIA			
Unit No	Title	Level	Credit	Unit No	Title	Level	Credit
DE2Y 34	Multimedia Fundamentals	7	2	-	-	-	-
DE2T 34	Audio Visual Techniques for Multimedia Applications	7	2	DF66 34	Multimedia Computing: Audio and Video 1	7	2
D7LR 34	Writing for the Media	7	1	DH4F 34	Writing for the Media	7	1
D75W 34	Multimedia: Developing Multimedia Applications	7	2	FIVT 34	Interactive Media: Authoring	7	2
DE31 34	Researching Multimedia Applications for Practical Re-delivery	7	1	-	Same Unit Appears in HND Interactive Media	-	-
DE34 34	User Interface Development	7	1	F1VV 34	User Interface Design	7	1
DE2W 34	Graphics for Creative Multimedia Design	7	2	-	-	-	-
D76J 35	Project Management	8	1	F1W0 34	Project Management For IT	7	1
D75X 34	IT: Applications Software 1	7	1	-	Same Unit Appears in HND Interactive Media	-	-
DE33 35	User Interface: Testing and Evaluation	8	2	-	-	-	-
D7XR 35	Video Production 2: Making a Video Programme	8	2	-	-	-	-
D7XP 35	Radio Production 2: Producing Programmes in a Range of Styles	8	2	-	-	-	-
DE30 35	Narrative and Genre in Computer Games	8	2	F6BX 35	Narrative and Genre in Computer Games	8	2
DE2X 35	Interactive Fiction	8	2	-	Same Unit Appears in HND Interactive Media	-	-
DE32 35	Scripting for Interactivity	8	2	-	Same Unit Appears in HND Interactive Media	-	-
DE2V 35	Developing Data Driven Applications	8	2	-	-	-	-
DE35 35	2D Digital Imaging and Animation	8	2	-	Same Unit Appears in HND Interactive Media	-	-
DE2N 35	3D Modelling and Animation	8	2	-	Same Unit Appears in HND Interactive Media	-	-
DE2P 35	Advanced Bitmap Graphics for Creative Multimedia Design	8	2	F6BS 35	Digital Imaging: Advanced Bitmap Techniques	8	1
DE2P 35	Advanced Vector Graphics for Creative Multimedia Design	8	2	F6BT 35	Digital Imaging: Advanced Vector Techniques	8	1
A6Y7 34	Developing Entrepreneurial Skills	7	1	New	Building an e-Business	7	1
D76A 34	Internet: Introducing e-Commerce	7	1	DH39 34	Internet: Introducing E-Commerce	7	1
D76B 34	Internet: Internet Client Services	7	1	-	-	-	-
D77H 34	Employment Experience 2	7	1	DV0M 34	Work Experience	1	7
D76R 35	SD: Event Driven Programming	8	2	-	-	-	-
D76S 35	SD: Fourth Generation Environment	8	2	-	-	-	-

### Appendix 3: Credit transfer documentation (cont)

HND MULTIMEDIA COMPUTING/ HND MULTIMEDIA COMPUTING — WEB DEVELOPMENT				HND INTERACTIVE MEDIA			
Unit No	Title	Level	Credit	Unit No	Title	Level	Credit
DF6D 35	Human Computer Interface	8	1	F6BV 35	Human Computer Interface		
DF60 35	Internet: Web Development	8	2	-	-	-	-
DF69 34	Multimedia Computing: Screen Based Graphics	7	2	-	-	-	-
DF63 34	Multimedia Computing: Interface Design and Authoring	7	3	-	-	-	-
DF68 34	Multimedia Computing: Multimedia Technology	7	1	-	-	-	-
DF6A 35	Professional and Legal Issues for Web and Multimedia Developers	8	1	F6BY 35	Professional Issues for Interactive Media Developers	8	1
D76J 35	Project Management	8	1	F1W0 34	Project Management for IT	7	1
DF6C 34	Software Development: Introduction	7	1	-	Same Unit Appears in HND Interactive Media	-	-
DF6P 35	Internet: Client Side Web Scripting	8	1	-	-	-	-
D76D 35	Internet: Web Server Management	8	2	F6BM 35	Web Server Platform	8	2
DF61 35	Internet: Web Technology and Security	8	2	-	-	-	-
D76P 35	Software Development: Developing for the WWW	8	2	-	Same Unit Appears in HND Interactive Media	-	-
D299 13	Database Systems (Advanced Higher)	7	0.5	-	-	-	-
A6Y7 34	Developing Entrepreneurial Skills	7	1	-	-	-	-
D095 13	Software Development (Advanced Higher)	7	0.5	-	-	-	-
DF5Y 34	Desk Top Publishing	7	1	DV95 34	Art and Design: Desk Top Publishing and Layout	7	1
D77H 34	Employment Experience 2	7	1	DV0M 34	Work Experience	7	1
D75X 34	Information Technology: Applications Software 1	7	1	-	Same Unit Appears in HND Interactive Media	-	-
D7CY 35	Information Technology: Applications Software 2	7	1	-	-	-	-
D76C 35	Internet: Configuration and Administration of Internet Services	8	2	-	-	-	-
D76B 34	Internet: Internet Client Services	7	1	-	-	-	-
D76A34	Internet: Introduction to e-Commerce	7	1	DH39 34	Internet: Introducing e-commerce	7	1
DF62 33	Internet: Introduction to Technologies	6	1	-	-	-	-
D5V4 34	Introduction to SQL	7	1	F1VY 34	Manage Database Systems Using SQL	7	1
D76E 34	Mathematics for Computing 1	7	1	-	-	-	-
D76F 34	Mathematics for Computing 2	8	1	-	-	-	-
DF64 34	Multimedia Computing: Animation 1	7	1	-	Same Unit Appears in HND Interactive Media	-	-
DF65 34	Multimedia Computing: Animation 2	8	2	-	-	-	-
DF66 34	Multimedia Computing: Audio and Video 1	7	2	-	-	-	-
D76W 34	Software Development: Program Planning	7	1	-	-	-	-
D76R 35	Software Development: Event Driven Programming	8	2	-	-	-	-
D76V 35	Software Development: Object-Oriented Programming	8	2	-	-	-	-
D77C 35	Systems Development: Relational Database Systems	8	2	-	-	-	-