Higher National Unit specification

General information for centres

Unit title: Design For Virtual Environments

Unit code: F1D9 35

Unit purpose: The Unit will introduce the candidate to the processes and practices inherent in designing for virtual environments, and will allow the candidate the opportunity to explore a range of design, model-creation/manipulation and animation techniques.

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

1   Produce designs for a virtual environment.
2   Create and texture 3D models for a virtual environment.
3   Create navigation for a virtual environment.

Credit points and level: 1 HN credit at SCQF level 8: (8 SCQF credit points at SCQF level 8*)

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

Recommended prior knowledge and skills: Access to this Unit is at the discretion of the centre. It may be beneficial for candidates to have some basic knowledge of computer graphics and be proficient in file management. This may be evidenced by the possession of relevant HN Units DW9G 34 *3D Animation Motion Studies*, DW9J 34 *Animation: An Introduction*, DW9H 34 *3D Computer Visualisation*, DF64 34 *Multimedia Computing: Animation 1*, DE2N 35 *3D Modelling and Animation*, or similar qualifications or experience

Core Skills: There are opportunities to develop the Core Skills of Information Technology and Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes. It is suggested that this Unit be delivered at a stage in the course when candidates have acquired experience in 3 Dimensional modelling and animation techniques.

General information for centres (cont)

Assessment: Assessment will require candidates to produce a three dimensional virtual environment, which would include:

♦ conceptual artwork/drawings/reference images submitted in the form of a workbook
♦ still image renders of textured models submitted in the form of a workbook
♦ finished project submitted in appropriate format

It would be possible to break this assessment down into three separate assessment events that assess each Outcome separately.

Higher National Unit specification: statement of standards

Unit title: Design For Virtual Environments

Unit code: F1D9 35

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

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

Outcome 1

Produce designs for a virtual environment

Knowledge and/or Skills

♦   Research skills
♦   Formats
♦   Problem solving
♦   Drawing skills

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

♦   produce research information detailing research of different formats that are relevant to the chosen/given brief
♦   produce preliminary sketches and detailed drawings of the proposed environment that detail research, selection and potential solutions

Sketches and drawings must be presented in a workbook or computer equivalent on disc. Research information must be contained in the workbook or presented separately as an oral or written report supported by pictorial material.

Drawings should articulate development of the environment from three or more perspectives. It is recommended that rough sketches articulate geometric form and scale, and that detailed drawings include model features, colours (or textures) and shading.

Assessment Guidelines

Assessment for Outcome 1 can be combined with Outcomes 2 and 3 as part of a single assessment for the Unit.

Higher National Unit specification: statement of standards (cont)

Unit title: Design For Virtual Environments

Outcome 2

Create and texture 3D models for a virtual environment

Knowledge and/or Skills

- 3D models
- Textures
- Evaluation
- Software skills
- Modelling/manipulation techniques
- Still image renders

Evidence Requirements

The candidate will need to provide evidence of their Knowledge and/or Skills by demonstrating that they can, in response to a given brief:

- use modelling/manipulation techniques to create 3D models suitable for inclusion in a virtual environment
- apply textures to 3D models, resulting in appropriate surface characteristics
- document and annotate each amendment to the model to reflect changes in construction or materials
- produce still image renders of textured models
- save rendered images to an appropriate storage device and add to workbook

Evidence presented should cover the key requirements as specified in the supplied brief and be supported by evaluative notes/discussion with the tutor.

Assessment Guidelines

The assessment of this Outcome can be combined with Outcomes 1 and 3 as part of a single assessment for the Unit.

Higher National Unit specification: statement of standards (cont)

Unit title: Design For Virtual Environments

Outcome 3

Create navigation for a virtual environment

Knowledge and/or Skills

- ♦ Lighting techniques
- ♦ Navigation of a virtual environment
- ♦ Rendering
- ♦ Storage media

Evidence Requirements

The candidate will need to provide evidence of their Knowledge and/or Skills by demonstrating that they can:

- ♦ utilise and apply appropriate lighting techniques for the design of the virtual environment such as replicated sunlight, shadows and caustic effects
- ♦ utilise navigation techniques such as fixed-path virtual cameras and/or interactive navigation controls
- ♦ create navigation of a virtual environment
- ♦ save final rendered animation using appropriate formats and storage devices

Evidence should be presented as a stored final rendered animation.

Assessment Guidelines

The assessment of this Outcome can be combined with Outcomes 1 and 2 as part of a single assessment for the Unit. It would be possible, if desired, to break this assessment down into three separate assessments.

Administrative Information

Unit code: F1D9 35

Unit title: Design For Virtual Environments

Superclass category: JA

Original date of publication: March 2007

Version: 01

History of changes:

Version	Description of change	Date

Source: SQA

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

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

Higher National Unit specification: support notes

Unit title: Design For Virtual Environments

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

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

Guidance on the content and context for this Unit

The Unit is intended to introduce the candidate to the processes and practices inherent in designing for virtual environments, and will allow the candidate the opportunity to explore a range of design, model-creation/manipulation and animation techniques.

A brief may be supplied by the tutor or can be negotiated with the candidate, based on an appropriate range of concepts that would fully address the range of knowledge, skills and Evidence Requirements.

Outcome 1 requires that candidates produce designs for a virtual environment. The candidate is required to produce research evidence relevant to their chosen/given brief. The evidence should be presented in the form of a report or by means of an oral presentation supported by pictorial evidence. It could be included in a folio of development evidence.

Candidates should research three genres (eg western, horror, sci-fi) featured among the following mediums: film, computer games, and Internet-based virtual environments. The purpose of this Outcome is to allow the candidate the opportunity to explore and evaluate a range of genre conventions eg iconographic elements, mise-en-scene, setting etc.

 The candidate is also required to produce preliminary sketches and detailed drawings of the proposed environment. These sketches and drawings should be presented in the form of a workbook outlining the different stages of research selection and possible solutions to the brief. The drawings should articulate development of the environment from at least three perspectives. The rough sketches should articulate geometric form and scale, and the detailed drawings should include model features, colours (or textures) and shading.

Outcome 2 requires the Candidate to use modelling/manipulation techniques to create 3D models suitable for inclusion in a virtual environment. These models should include environmental set-pieces eg organic landscapes/architectural structures and prop population models eg furniture/appliance/ flora. The models should reflect the design solutions outlined in the preliminary drawings.

The Candidate should use an appropriate software package to create 3D models or manipulate/modify existing models. The Candidate should successfully apply textures to 3D models, resulting in appropriate surface characteristics eg bump-mapping, opacity etc. The Candidate should document and annotate each amendment to the model to reflect changes to construction or materials.

The rendered images should be saved to an appropriate storage device and added to the workbook.

Higher National Unit specification: support notes (cont)

Unit title: Design For Virtual Environments

Outcome 3 requires the Candidate to create navigation for a virtual environment. The Candidate should utilise and apply lighting techniques appropriate to the design of the virtual environment eg replicated sunlight/shadows/caustic effects.

The Candidate should allow navigation of the virtual environment eg fixed-path, virtual camera, or interactive user navigation controls (dependant on platform) eg mouse/keyboard driven navigation controls.

The Candidate should save the final rendered animation using appropriate formats and available storage devices.

Guidance on the delivery and assessment of this Unit

This Unit has been developed as part of the HND Computer Art and Design Award. It is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Opportunities may be taken to link or integrate with other aspects of the course and a thematic approach adopted for both delivery and assessment.

Assessment guidance has been referenced under each Outcome. Opportunity for centre elected, individual, Outcome-by-Outcome assessment is advised.

It would be helpful if candidates could observe and experience a wide range of environment design, model population and animation techniques delivered by professionals within a commercial setting.

Opportunities for developing Core Skills

Candidates have to produce a three dimensional virtual environment, to include conceptual artwork, drawings, reference images, and still image renders of textured models. Skill in the use of technology therefore underpins practical work as they use modelling and manipulation techniques to create 3D models suitable for inclusion in a virtual environment.

As they undertake the practical work candidates will naturally analyse and seek solutions to a range of theoretical and actual using a variety of creative applications of software. Planning decisions will involve identifying and examining variables before deciding on, and implementing suitable design approaches. This will provide opportunities to develop creative problem solving skills to an advanced level as the project is finished and submitted in appropriate format. Evaluation which examines all stages of the design and would be on-going. Peer discussion and constructive review as designs are presented could provide useful support to the process.

Higher National Unit specification: support notes (cont)

Unit title: Design For Virtual Environments

Open learning

This Unit could be delivered by distance learning provided opportunities to attend workshops and demonstrations could be incorporated to ensure appropriate mentoring of candidate progress.

It may be appropriate under the circumstances that distance-learning candidates engage in the single assessment option rather than the Outcome-by-Outcome assessment.

For information on normal open learning arrangements, please refer to the SQA guide, *Assessment and Quality Assurance of Open and Distance Learning* which is available on SQA's website: **www.sqa.org.uk**.

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (**www.sqa.org.uk**).

General information for candidates

Unit title: Design For Virtual Environments

The Unit will introduce you to the processes and practices inherent in designing for virtual environments, and will allow you the opportunity to explore a range of design, model-creation/manipulation and animation techniques. Throughout the Unit, you will work to a brief based on a range of concepts.

For Outcome 1 you will research ideas, methods and genres and genre conventions appropriate to the production of designs for a virtual environment.

You will then produce preliminary sketches and detailed drawings of the proposed environment. You will present these in the form of a workbook that outlines the different stages of research, selection and development of possible solutions to the brief.

For Outcome 2 you will use modelling/manipulation techniques to create 3D models suitable for inclusion in a virtual environment. The models will include environmental set pieces and will reflect the design solutions outlined in the preliminary drawings. You will use an appropriate software package to create 3D models or manipulate/modify existing models.

You will document and annotate each amendment to the model to reflect changes to construction or materials.

The rendered images will be saved to an appropriate storage device and added to your workbook.

For Outcome 3 you will create navigation for a virtual environment.

You will utilise and apply lighting techniques appropriate to the design of the virtual environment.

You will allow navigation of the virtual environment.

Finally, you will save the final rendered animation using appropriate formats and available storage devices.