National Unit specification: general information

Unit title: 3D Modelling and Animation: An Introduction (SCQF Level 5)

Unit code: FN91 11

Superclass: CE

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Source: Scottish Qualifications Authority

Version: 01

Summary

The purpose of this Unit is to provide candidates with the knowledge and skills to produce a short 3D animated sequence. Candidates will gain an understanding of the basic principles of planning a 3D animation as well as developing their practical skills by producing a short animated piece.

This is an optional Unit in the National Certificate in Computer Games Development, but is also available for candidates wishing to study the Unit on its own.

This Unit is suitable for candidates who have previous experience in graphic design and/or 2D animation, or express an interest in 3D modelling and/or animation.

Outcomes

1 Plan the production of a 3D animated sequence.
2 Produce and texture at least one 3D model suitable for animation.
3 Animate a 3D sequence lasting no less than ten seconds.

Recommended entry

Entry is at the discretion of the centre, although basic computer skills would be recommended.

National Unit specification: general information (cont)

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Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5*)

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

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

National Unit specification: statement of standards

Unit title: 3D Modelling and Animation: An Introduction (SCQF Level 5)

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

Outcome 1

Plan the production of a 3D animated sequence.

Performance Criteria

(a) Produce drawings of the proposed 3D model from three viewpoints.
(b) Produce annotated storyboards of the proposed animated sequence.

Outcome 2

Produce and texture at least one 3D model suitable for animation.

Performance Criteria

(a) Produce at least one 3D model suitable for animation.
(b) Apply a texture to the 3D model.

Outcome 3

Animate a 3D sequence lasting no less than ten seconds.

Performance Criteria

(a) Apply animation to the 3D model.
(b) Apply appropriate lighting to the scene.
(c) Render the animation and save in an appropriate file format.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Product evidence should be produced to demonstrate that the Candidate has achieved all of the Outcomes and Performance Criteria.

Outcome 1 requires the production of drawings of the proposed 3D model that the candidate plans to create/model. At least three drawings are required to satisfy the requirements of the Outcome. The three drawings should be of the model from three different viewpoints, one drawing of the front of the model, one from a side view of the model and one drawing of the model drawn in perspective. The drawings can be hand-drawn or computer generated.

In addition to the drawings of the proposed model, a set of storyboards portraying the animation must be produced. The storyboards should accurately reflect the final animation sequence in relation to time and direction. The storyboards should identify the keyframes of the animation, this will dictate the number of storyboard panels required.

Outcome 2 requires the candidate to produce and texture at least one 3D model suitable for animation. A texture must be applied to the model.

Outcome 3 requires the candidate to apply animation to the model produced. The animated sequence must last no less than ten seconds. The animation need not be of a complex nature, but the model must be animated in some form. The model must also be lit appropriately, allowing a clear view of the model throughout the sequence. The animated sequence must be rendered and saved in an appropriate file format.

National Unit specification: support notes

Unit title: 3D Modelling and Animation: An Introduction (SCQF Level 5)

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

This Unit is aligned to the following Skillset National Occupational Standards (NOS):

- IM2 Obtain Assets for Use in Interactive Media Products
- IM3 Prepare Assets for Use in Interactive Media Products
- IM16 Plan Content for Wed and Multimedia Products

In this Unit, candidates are required to plan and produce a 3D animation lasting no less than ten seconds. The Unit is designed in such a way that the complexity of the modelling and animation is flexible enough to allow candidates with no prior experience of 3D modelling and/or animation to produce a basic 3D model (such as a cube, sphere, cylinder), apply a simple texture to the model and then apply some basic animation to the model. An example would be the candidate producing some 3D text, such as their name; applying a colour to the text, then animate the text rotating on a single axis for ten seconds. However, the Unit also affords the opportunity to those who have prior knowledge of 3D modelling and animation to produce a far more complex animated piece.

In this Unit candidates will learn about planning an animation. This will include drawing techniques (for the proposed model), which may include shaded renderings, drawings that explore form and texture, and perspective drawings. The drawings can be hand-drawn or computer generated, black and white or in full colour.

Candidates will also learn about the storyboarding process for animation; identifying the key frames in the animation, and portraying these in storyboard format. Again, the storyboards can be hand-drawn or computer generated, black and white or in full colour. A simple 10 second animation may only require 6 frames, whereas a longer, more complex piece would require more frames.

Candidates will learn how to produce a 3D model in an appropriate software package. This will provide an introduction to the interface of the software, and basic modelling techniques will be learned. Candidates will also learn texturing techniques, whether simply assigning a colour to their model, or using bitmapping / procedural mapping techniques. Candidates may populate their scene by importing pre-modelled assets.

The model produced can be of a basic nature (such as a cube or sphere), or a more complex model if the candidate is familiar with the software being used.

Candidates will also learn animation techniques, whether basic, such as moving a model on one axis and recording the motion, or positional, rotational, scaling animation or more complex animation if the candidate is familiar with the software being use such as assigning the model to a motion path.

Candidates will learn basic lighting skills. The model should be visible throughout the animation, therefore should be lit appropriately. This could be as simple as introducing an omni-directional light, or a more complex, three-point set up could be implemented.

Candidates will also learn how to render an animation to an appropriate file format (such as avi, FLV, Mpeg) and save to backing storage.

In summary, this Unit can be delivered to candidates with no prior knowledge of 3D modelling and animation and they will learn the basic skills required to successfully complete the Unit. However, candidates with prior knowledge, or who demonstrate an aptitude with the software, have the opportunity to go beyond basic modelling, texturing and animation, and produce a piece more complex in nature.

Guidance on learning and teaching approaches for this Unit

Practical activities should be lecturer-led in that techniques and processes should be explained clearly and demonstrated to candidates, and understood by the candidates prior to undertaking the practical tasks.

Guidance on approaches to assessment for this Unit

The following approaches to assessment are suggested:

Outcome 1

Folio — a selection of drawings and storyboards selected to meet the evidence requirements.

Outcome 2

Design activity — candidates will investigate a design problem, consider possible solutions and develop a final solution.

Outcome 3

Expressive activity — candidates use visual elements to express and develop ideas in the production of artwork(s) using appropriate skill in the handling of media.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

National Unit specification: support notes (cont)

Unit title: 3D Modelling and Animation: An Introduction (SCQF Level 5)

Opportunities for developing Core Skills

There is no automatic certification of Core Skills or Core Skill component in this Unit. However, Problem Solving (Outcome 1 — planning), Numeracy (Outcome 2 — parametric modelling) & IT (Outcomes 2 and 3) will contribute to Core Skills development.

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**

History of changes to Unit

Version	Description of change	Date