**Higher National Unit specification**

**General information for centres**

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

**Unit code:** F565 34

**Unit purpose:** This Unit is designed to develop candidates understanding of the techniques of 3D rigging, weight mapping and the fundamental concepts of animation and their application in the environment of 3D computer animation.

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

1    Create a primitive box model and incorporate the basic concepts of 3D model rigging.
2    Create examples of animation concepts in a 3D computer environment.
3    Create a short 3D animation sequence to a given brief.

**Credit points and level:** 2 HN credits at SCQF level 7: (16 SCQF credit points at SCQF level 7*)

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

**Recommended prior knowledge and skills:** Access to this Unit is at the discretion of the centre. It would be beneficial if candidates had a general knowledge of computer applications and basic drawing skills. In addition the candidate must have an understanding of basic 3D Computer Animation language including the terms: Primitives; Open GL and Render.

**Core Skills:** There are opportunities to develop the Core Skills of *Information Technology* and *Communication* 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.

**Assessment:** This Unit could be assessed by practical based assessments with evidence presented in digital form.

The assessment for Outcome 1 will require candidates to rig one (1) basic 3D computer model with weight mapping. In addition to this the candidate will set morph targets that can be used to supplement the rig.

# General information for centres (cont)

For Outcome 2 candidates will create a series of sequences that provide evidence of an understanding of fundamental Animation language. This must include: follow through; overlapping action and ease in, ease out. This will provide candidates with a fundamental grounding in the rudiments of animation movement.

For Outcome 3 candidates should utilise all elements learned and practised in Outcomes 1 and Outcomes 2. These skills should be developed to allow candidate to create a short, cohesive narrative based on the elements developed and knowledge and skills learned in Outcome 2.

# Higher National Unit specification: statement of standards

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

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

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

# Outcome 1

Create a primitive box model and incorporate the basic concepts of 3D model rigging

### Knowledge and/or Skills

♦ Primitive box models
♦ Rigging Techniques
♦ Morph targets
♦ Weight maps

### Evidence Requirements

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

♦ create a primitive box model with a low polygon count
♦ produce a simple rig for the primitive box model
♦ weight map the primitive box model
♦ design morph targets for the primitive box model

### Assessment Guidelines

The assessment could be a single assessment. Candidates could be encouraged to investigate weight mapping to a detailed level with regard to its relationship with polygonal modelling.
Polygons should be universally understood at this level.

# Higher National Unit specification: statement of standards (cont)

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

## Outcome 2

Create examples of animation concepts in a 3D computer environment

### Knowledge and/or Skills

♦ Traditional animation concepts

### Evidence Requirements

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

♦ create scenes which show manipulation of a simple rig and simple morph targets to demonstrate: squash and stretch; follow through; overlapping action; ease in; ease out. Candidates must provide one rendered scene for each of these animation concepts.

### Assessment Guidelines

Candidates could provide short sequences that clearly illustrate the above fundamental animation concepts. These could be presented, at the very minimum, in a decent resolution preview format such as Open GL. There is no time limit but they should be of a sufficient timescale for the assessor to view the concept involved. Candidates may have access to reference materials and help files.

## Outcome 3

Create a short 3D animation sequence to a given brief

### Knowledge and/or Skills

♦ Storyboarding
♦ 3D Animated sequences
♦ Rendering

### Evidence Requirements

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

♦ produce a storyboard for a 3D animated sequence with a minimum 20 seconds duration
♦ animate a model using all the traditional animation concepts learned in Outcomes 1 and 2
♦ render a minimum 20 second animated sequence and output to a standard storage source

The given brief should allow candidates to provide evidence of the above.

# Higher National Unit specification: statement of standards (cont)

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

## Assessment Guidelines

The candidate's work could take account of all concepts and apply them in a convincing narrative extract sequence which does not in any way require to demonstrate a completed linear or chronological narrative. It is merely an exercise in adapting the concepts within a context.

The work should be submitted to assessor in a standard duplicated digital format such as DVD disc whilst ensuring that candidates have backed up all support files, including models, reference files and the finished render. In addition all paper assessment materials such as storyboards should be presented to professional standards.

Assessment of this Outcome could be integrated with F7ET 34: 3D Computer Animation: Character Modelling Intermediate.

## Administrative Information

**Unit code:** F565 34

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

**Superclass category:** JB

**Original date of publication:** August 2008

**Version:** 02

**History of changes:**

| Version | Description of change | Date |
|---|---|---|
| 02 | Minor amendment in Outcome 1 and Clarification of Assessment Guidelines in Outcome 3. | 25/04/13 |
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**Source:** SQA

# Higher National Unit specification: support notes

**Unit title:**   3D Computer Animation: Movement Studies Intermediate

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 80 hours.

## Guidance on the content and context for this Unit

The Unit is designed to provide candidates with the knowledge and skills involved in the fundamental concepts of movement within an animation environment. These standard techniques may be adapted and be applied within a 3D computer animated environment.

Candidates may be required to evolve a rigging and morph targeting system that is generic to all major 3D software packages. Thereafter, candidates may engage with a series of isolated drill type exercises that will familiarise them with fundamental traditional concepts which will then be married to 3D computer animation techniques.

In Outcome 3, the experience gained in the previous Outcomes could be broadened to include an exercise that will also give candidates experience in storyboarding a 3D computer animation narrative that represents emotion through movement. This Unit may be suitable for candidates wishing to develop greater competence in the design, creation and production of animation for generic 3D computer applications.

The Unit will encourage realistic workplace practices and work standards, using industry standard hardware and software. The Evidence Requirements are the minimum standards for assessment and should not exclude assessors from using up-to-date features as software and animation techniques evolve.

## Guidance on the delivery and assessment of this Unit

This Unit is likely to form part of a Group Award designed to provide candidates with the technical knowledge and skills for employment within a computer-aided design environment.

If this Unit is delivered as part of the HNC/D 3D Computer Animation Group Award, opportunities may be taken to link with other aspects of the course and a thematic approach adopted for both delivery and assessment.

### Outcome 1

Candidates could be provided with information on the basic and mechanical concepts of 3D rigging, weight mapping and morph techniques. Internet facilities could be made available for sourcing examples and tutorials as a supplement to assessor led demonstrations.

# Higher National Unit specification: support notes (cont)

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

### Outcome 2

Candidates could be shown example footage from a variety of sources, both modern and traditional. This could be followed by assessor led demonstrations on each of the techniques where evidence will be required. Remaining vigilant that this is a SCQF level 7 Unit, complex rigging concepts such as Inverse Kinematics (IK) should be avoided as it is unlikely that candidates will have the knowledge or confidence at this stage and may become confused by the difficulties that this steep learning curve presents. That said if an individual candidate is prepared to study the subject further and can demonstrate comprehension of Inverse Kinematics (IK) rigging systems at this stage then that should not be discouraged although it should be made clear that is not mandatory at this early stage. This would provide a gentler path towards more advanced rigging at SCQF level 8 and also ensure that candidates concentrate on the task in hand without being distracted by mechanical issues. Avoidance of this will also encourage candidates to utilise their imaginations and provide the illusion of life using simple primitive objects.

### Outcome 3

At this stage candidates could be gently encouraged to explore the technicalities of designing a stable rigging system. In addition to this, the exercises explored in Outcome 2 could be eased into a more cohesive simple narrative that combines several elements from Outcome 2. It would also be beneficial at this stage to indicate the difference between an Animation Storyboard and one that is used for Film ie more to show extreme (key) poses than a shorthand version of the main action. This experience will enhance candidate understanding of the importance of storyboarding to projects in the wider industry at large.

### *Opportunities for developing Core Skills*

If the candidate follows the instructions for Outcomes 1, 2 and 3 they will develop the Core Skill associated with accessing and evaluating electronic material which provide an effective source of information on the basic concepts of movement applied to CG animation. The complexity of rigging will also ensure candidates develop methodical working systems that require strong communication with peers and assessors, not to mention fairly intensive numerical monitoring, given the amount of numerical data that will be required when scaling the model. This will be further explored by the volume of numerical input necessary for calculating rotations and transformations. These concepts will help develop the Core Skills of literacy, *Numeracy* and *Problem Solving*.

## Open Learning

This Unit could be delivered by open, distance and online learning. However, it would require planning by the centre to ensure sufficiency and authenticity of candidate evidence.

## 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**.

# General information for candidates

**Unit title:** 3D Computer Animation: Movement Studies Intermediate

This Unit will provide an introduction to fundamental animation concepts that are universally understood and practiced in the animation industry. These include the generically termed: follow through; squash and stretch; overlapping action; ease in and ease out.

In Outcomes 1 and 2 you will explore simple rigging and morphing systems that will enable you to investigate these fundamental concepts. In order to do this with any success you will learn the role of skeletal systems and their effect on 3D geometry and the difference between skeletal and morphing systems.

In Outcome 3 you will merge the concepts investigated in Outcomes 1 and 2 into a more cohesive narrative. This is not an instruction to make a complex storyline but simply provides an opportunity to bring the concepts studied and practiced in Outcomes 1 and 2 into a more natural situation. In addition to this you will also demonstrate that you understand animation storyboarding ie Storyboarding extreme poses (Key Frames).

You will construct a rigging, morphing and weight mapping system for this polygonal model.

Assessment will be based on presented evidence which demonstrates understanding of rigging, morphing and weight mapping. Outcomes 2 and 3 will require evidence that demonstrates exploration of fundamental animation concepts using this rigged, morphed and weighted model.

You could develop Core Skills by accessing and evaluating electronic material which provide an effective source of information on the basic concepts of movement applied to CG animation. The complexity of rigging will also ensure you develop methodical working systems that require strong communication with peers and assessors, not to mention fairly intensive numerical monitoring, given the amount of numerical data that will be required when scaling the rigging system and applying the weight mapping to this model. This will be further explored by the volume of numerical input necessary for calculating rotations and transformations. These concepts will help develop the Core Skills of literacy, *Numeracy* and *Problem Solving*.