



Higher National Unit specification

General information

Unit title: 3D Computer Animation: Character Modelling Intermediate

Unit code: H49W 34

Superclass: JB

Publication date: June 2013

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed to introduce and develop the learners understanding of the techniques of character modelling, bones, rigging and fundamental principles of animation and their application in the environment of 3D computer animation.

The learner will be introduced to techniques and skills which will help them create character body types, physical poses and facial expressions which will imbue characters with emotion while the character interacts with environments, other characters and elements in the animation.

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Create and Surface a Non-Organic 3D Character Model.
- 2 Create and Surface an Organic 3D Character Biped Model.
- 3 Create a rendered 3D animation sequence.

Credit points and level

2 Higher National Unit credits at SCQF level 7: (16 SCQF credit points at SCQF level 7)

Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. It would be beneficial if the learner had general knowledge of computer applications and drawing skills. In addition the learner should have an understanding of 3D Computer Animation language.

Higher National Unit specification: General information (cont)

Unit title: 3D Computer Animation: Character Modelling Intermediate

Core Skills

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

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

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.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

Higher National Unit specification: Statement of standards

Unit title: 3D Computer Animation: Character Modelling Intermediate

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.

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. Learners 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 and Surface a Non-Organic 3D Character Model.

Knowledge and/or Skills

- ◆ Polygon modelling
- ◆ Mapping techniques
- ◆ Lighting techniques

Outcome 2

Create and Surface an Organic 3D Character Biped Model.

Knowledge and/or Skills

- ◆ Polygon modelling
- ◆ Mapping techniques
- ◆ Lighting techniques

Outcome 3

Create a rendered 3D animation sequence.

Knowledge and/or Skills

- ◆ Animation principles
- ◆ Storyboarding techniques
- ◆ Layouts
- ◆ Rendering techniques

Higher National Unit specification: Statement of standards (cont)

Unit title: 3D Computer Animation: Character Modelling Intermediate

Evidence Requirements for this Unit

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills across all Outcomes by showing that they can:

Outcome 1

- ◆ Create model development sheets
- ◆ Create a non-organic 3D model
- ◆ Surface the non-organic 3D character model using image-mapping techniques
- ◆ Provide a still image of a model, rendered, lit and textured

Outcome 2

- ◆ Create model development sheets
- ◆ Create an organic 3D character biped model
- ◆ Create a skeletal rig using inverse and or forward kinematics for the character model
- ◆ Surface the character model using appropriate mapping techniques
- ◆ Provide a still image of a model, rendered, lit and textured

Outcome 3

- ◆ Create a storyboard
- ◆ Create a layout of animated sequence containing relevant key frames
- ◆ Demonstrate animation principles and techniques in producing movement of 3D non-organic character model
- ◆ Demonstrate animation principles and techniques in producing anthropomorphic movement of 3D organic character model
- ◆ Create a short (minimum 20 second) rendered animated sequence



Higher National Unit Support Notes

Unit title: 3D Computer Animation: Character Modelling Intermediate

Unit Support Notes are offered as guidance and 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 introduce learners to the knowledge and skills involved in 3D Computer modelling, surfacing characters and applying movement using animation principles.

This Unit would be suitable for learners wishing to develop greater competence in the design, creation and production of animation for various 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 develop.

Guidance on approaches to delivery of this Unit

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

If this Unit is delivered as part of the HNC/HND 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

Learners should be provided with information on the principles and mechanical concepts of 3D non-organic character modelling and surfacing techniques. Internet facilities could be made available for sourcing examples and tutorials as a supplement to lecturer led demonstrations. Mapping exercises should be provided to assist learners in understanding use of textures and the interaction of surfaces and light.

Outcome 2

Learners should be provided with information on the principles and mechanical concepts of 3D organic character modelling and surfacing techniques. Internet facilities could be made available for sourcing examples and tutorials as a supplement to lecturer led demonstrations. Mapping exercises should be provided to assist learners in understanding use of textures and the interaction of surfaces and light.

Higher National Unit Support Notes (cont)

Unit title: 3D Computer Animation: Character Modelling Intermediate

Outcome 3

Learners need to understand how animation principles affect movement of characters and objects in a three dimensional environment. Reference footage which may assist learners can be sourced from the internet, DVDs, etc.

Learners should be encouraged to appreciate that successful character design and movement is based on engaging with the audience by demonstration of emotion and believability. Assessor led demonstrations should assist learners to learn how to achieve the requisite integrity of movement and humanity in their models. As this is an SCQF level 7 Unit, learners should have acquired the knowledge, confidence and skills at this stage to provide the evidence required.

Learners must be more confident and experienced in the techniques of designing a 3D character model and surfacing techniques to provide the minimum twenty second rendered animated sequence. The Learner should be capable of producing a draft storyboard, layouts and a final animation which demonstrates a range of movements for anthropomorphic and non-organic models.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

All Outcomes within this Unit could be assessed together or separately.

Outcome 1

This Outcome could be assessed separately or conjoined with Outcomes 2 and 3; which is the recommended option. The learner should be supplied with a range of materials/textures for use with the model but it is acceptable to use alternatives from external sources, ie internet or CD-ROMs.

The learner may, if they wish, create surface materials for use with the model. In cases where surface materials are imported from an external source, ie a web site or DVD, the source must be identified and referenced; this requirement is extended to include generic elements used by the learner in creation of texture/s.

The model must be capable of having textures applied to more than one surface using available mapping techniques, ie UV texture mapping.

Higher National Unit Support Notes

Unit title: 3D Computer Animation: Character Modelling Intermediate

Outcome 2

This Outcome could be assessed separately or conjoined with Outcomes 1 and 3; which is the recommended option, allowing the learner to create complimentary or co-dependant models.

The learner should be supplied with a range of material for use with the model but it is acceptable to source alternatives from external sources, ie internet or CD-ROMs. The learner may, if they wish, create surface materials for the model. In cases where surface materials are imported from an external source, ie a web site or DVD, the source must be identified and referenced; this requirement is extended to include generic elements used by the learner in creation of texture/s.

The model must be capable of having textures applied to more than one surface using available mapping techniques, ie UV texture mapping. The model must be correctly lit, including the use of ambient light to demonstrate at least three of the following render algorithms or techniques; shading, indirect illumination, texture and or bump mapping, shadows, fog, reflections, transparency and translucency, refraction and/or diffraction, and rendered in a standard format, ie JPEG.

Model/Character development sheet must be part of this Outcome submission.

Outcome 3

Outcome 3 requires learners to produce a short rendered, animated sequence (a minimum twenty second sequence) which can use the models created in Outcomes 1 and 2. Separate models can be created and used for this assessment but this is not recommended. Regardless of the option chosen the learner must demonstrate a range of movements for both the organic and non-organic models which reflects the requirements of animation principles.

The work should be submitted for assessment in a standard duplicated digital format such as CD-ROM or DVD. All support files, models, reference files, layout sheets (blocked out simple animations timed for the twenty second requirement) storyboards and the finished rendered animated sequence should be submitted.

Assessment of this Outcome could be integrated with the assessment of Outcome 3 of F565 34, *3D Computer Animation: Movement of Studies Intermediate*.

Opportunities for 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 social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Higher National Unit Support Notes (cont)

Unit title: 3D Computer Animation: Character Modelling Intermediate

Opportunities for developing Core and other essential skills

There are opportunities to develop aspects of the Core Skills; *Communication* and *Information and Communication Technology* at SCQF 6 level. Experience can be gained in accessing and evaluating electronic sources that provide an effective source of information on the principles of movement applied to CG Animation. Character modelling will also ensure learners develop visual awareness and design skills through methodical working systems that require strong communication with peers and lecturers, not to mention fairly intensive numerical monitoring.

History of changes to Unit

Version	Description of change	Date

© Scottish Qualifications Authority 2013

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Business Development and Customer Support team, telephone 0303 333 0330.

General information for learners

Unit title: 3D Computer Animation: Character Modelling Intermediate

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

The Unit is designed to introduce you to the knowledge and skills involved in 3D Computer modelling, surfacing characters, rigging them and applying movement using animation principles.

Access to this Unit is at the discretion of the centre. It would be beneficial if you had a general knowledge of computer applications and drawing skills. In addition you should have an understanding of 3D Computer Animation language.

On completion of this Unit you should be able to:

- 1 Create and Surface a Non-Organic 3D Character Model.
- 2 Create and Surface an Organic 3D Character Biped Model.
- 3 Create a rendered 3D animation sequence.

It should be understood that this Unit is aimed at instilling a comprehensive knowledge of the entire animation process from modelling to relevant application of that model within a 3D Computer environment. Importantly it should also be stated that this is not merely a technical exercise but also demands you explore aesthetic skills which enhance employability or further study.

It would be expected that you should have acquired the knowledge, confidence and skills at this stage to provide the evidence required.

The Unit may also provide you with opportunities to develop the Core Skill of *Information and Communication Technology* at SCQF level 6 and *Communication* at SCQF level 6, although there is no automatic certification of Core Skills or Core Skills components.