

## **SQA Advanced Unit Specification**

### **General information for centres**

**Unit title:** 3D Modelling and Animation

**Unit code:** HT0D 48

**Unit purpose:** This unit is designed to enable candidates to plan for and create models for animation in a 3D software environment.

On completion of this unit candidates should be able to:

1. plan a 3D computer-generated animation sequence
2. create 3D computer models for an animation
3. create a 3D animation

**Credit value:** 2 SQA Credits at SCQF level 8: (16 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 National 1 to Doctorates.*

**Recommended prior knowledge and skills:** Access to this unit is at the discretion of the centre. However, it would be beneficial if candidates were proficient in computer use and saving files in a methodical way. This may be evidenced by the possession of relevant National units, SQA Advanced Units or experience. Art and Design and/or Craft Design and Technology at SCQF level 6 would provide useful background knowledge but are not essential to success in this unit. It is recommended that candidates have completed units in ‘Graphics for Creative Multimedia Design’ and ‘2D Digital Imaging and Animation’.

**Core skills:** There may be opportunities to gather evidence towards core skills in this unit, although there is no automatic certification of core skills or core skills components.

## **SQA Advanced Unit Specification**

**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. The most appropriate approach to delivery is one that requires the candidate to create an animation that can be integrated with a ‘showreel’ or a multimedia ‘showcase’ of their overall achievement. The lecturer should act as a client for the finished project and the candidate should respond accordingly.

## **SQA Advanced Unit Specification**

**Assessment:** The assessment for this unit will be product based in the form of:

- A project file containing planning paperwork
- A storage medium containing computer created models, and final animation(s).

**SQA Advanced Unit specification: statement of standards**

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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**

Plan a 3D computer-generated animation sequence

**Knowledge and/or skills**

- How to write a treatment outlining a 3D animation proposal
- How to use drawing and/or imaging skills to create a storyboard to a client presentation standard from a given brief
- How to use drawing and/or imaging skills to create simple reference drawings for the main elements of the animation
- How to write a project plan which establishes a production time scale

**Evidence requirements**

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- produce an A4 treatment detailing: title; duration; target audience; aims; structure; equipment and budget
- storyboard a 30-second 3D animation with key frames shown in a sequence of at least eight images
- create at least three A4 reference drawings for the key scene elements/models to be generated
- produce an A4 written plan of the work, to be done on a week-by-week basis

**Assessment guidelines**

Candidates should understand the need to produce clear paperwork so that clients in the real world can see what they are contracting to pay for and that both parties can form an agreement about what should be produced. If possible, exemplar materials of treatments and storyboards should be provided. Candidates should also realise their paperwork should reflect the budget of the project.

## **SQA Advanced Unit Specification**

The emphasis is on clarity, not on artistic quality – the paperwork is a communication aid. Similarly with the reference drawings, candidates should replicate real world practices of ensuring that the agreed drawings are then implemented. The project plan should be used as a tool by both candidates and centres to keep them on target to produce the different stages the treatment outlines. The paperwork should be kept in a folder and be referred to throughout the project.

### **Outcome 2**

Create 3D computer models for an animation.

#### **Knowledge and/or skills**

- Make and modify 3D models to scale in line with reference drawings
- Surface 3D models appropriately

#### **Evidence requirements**

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- create at least four finished models with appropriate surfaces for inclusion in a 3D animation

#### **Assessment guidelines**

Candidates need to be shown how to use a piece of 3D software to model with and then be given time to familiarise themselves with its use. It is unlikely that candidates would use all of the tools available within the software. However, candidates should gain an understanding of the key elements and be able to recreate the reference drawings they have planned. It is advisable to work to a real life scale as this would enable the combining of 3D with live action which although is not a requirement of the unit, is an essential point to realise. The surfaces should be as sophisticated or otherwise as candidates have planned. Again, given the complexity of 3D packages and the constraints of a 2-credit unit candidates are unlikely to exhaust the limits of the software. Realising the reference drawings is the key aim of this Outcome.

### **Outcome 3**

Create a 3D animation.

#### **Knowledge and/or skills**

- Assemble 3D models as specified by the storyboard
- Move models and camera to create an animated sequence
- Create final rendered output in appropriate format

## **SQA Advanced Unit Specification**

### **Evidence requirements**

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- produce a 30-second animation
- save the animation in an appropriate format

### **Assessment guidelines**

Candidates need to be shown how to animate using supplied 3D software and then be given time to familiarise themselves with its use. Candidates would not be expected to use all of the features available within the software. However, candidates should gain an understanding of the key elements of moving models and camera to be able to recreate the storyboard drawings they have planned. The animation should have a sense of pace and timing and fulfil the 30-second brief. The final renders screen size will be determined by its final use. For example, it might be included in an interactive multimedia application or be a suitable size for television work and this will also determine the storage medium for the final output.

## SQA Advanced Unit Specification

### Administrative Information

<b>Unit code:</b>	HT0D 48
<b>Unit title:</b>	3D Modelling and Animation
<b>Superclass category:</b>	JB
<b>Original date of publication:</b>	August 2017
<b>Version:</b>	01

#### History of changes:

Version	Description of change	Date

**Source:** SQA

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## **SQA Advanced Unit Specification**

### **SQA Advanced Unit specification: support notes**

#### **Unit title:** 3D Modelling and Animation

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**

This unit is designed to enable candidates to plan, create artwork and then animate in a 3D modelling and animation software environment. Useful background information can be found in a variety of 3D animation text books which are widely available. Likewise as well as using software manuals lecturers offering this unit may find additional books useful. There may be helpful tutorials from the World Wide Web, although these should be carefully worked through prior to recommending to candidates to ensure that vital elements have not been omitted. Candidates may find it difficult to gauge the complexity of their proposals, and should rely on the lecturer's final judgement (in the capacity of 'the client') in deciding what to include in their finished production, so that this is achievable within the time allowed. The initial treatment is a useful tool in giving an overview of the whole animation. A new treatment can quickly be drafted if an initial idea is found to be unworkable.

This unit is intended as an introduction to the basic principles of 3D modelling and animation using an industry standard 3D-modelling package. It has been contextualised for the SQA Advanced Certificate in Computer Games Development, where the emphasis is on the learner's creativity and design flair.

This unit may form part of a group award or be completed as a freestanding unit.

#### **Instruments of assessment**

All the instruments of assessment are based on a single project that the student works through to achieve the three outcomes.

The project involves the creation of a scene complete with 3D models using the intrinsic 3D primitives supplied with the package. Outcome 1 requires the student to produce a treatment, storyboard and reference drawings to support the final project. The student must realise the need for strong supporting documentation.

Outcomes 2 and 3 require the student to create a scene and populate it with 3D models. The student will be given a project brief from which they will produce a scene of their own design and populate it with the appropriate 3D models. After the models have been created the student will then animate them using basic keyframe techniques.

Assessors must ensure the authentication of the candidate's work, the level of work required for the assessments is inherent in the evidence requirements.



### Guidance on the delivery and assessment of this unit

Due to the complexity of 3D animation it is expected that this unit will be delivered as a stand-alone unit, as opposed to being integrated closely with other units in any one course programme. Programmes within which it may fit could include Interactive Multimedia, Animation and 3D Computer Animation. This unit could be delivered on a weekly or bi-weekly basis at the discretion of the centre. A typical delivery pattern for the unit might be:

- Introduction to the unit (1)
- Overview of the capabilities of 3D software – modelling, surfacing and animation (1)
- Paperwork and planning exemplars (1)
- Working towards Outcome 1 – treatment, storyboards, reference drawings and production plan (2)
- Modelling – demonstration and practice of basic tools (4)
- Modelling – demonstration and practice of advanced operations (2)
- Creation of models (4)
- Surfacing – demonstration and application of techniques (1)
- Surface creation for chosen models (1)
- Animation – demonstration and practice of basic skills (1)
- Animation of final piece (4)
- Render and saving of final material (1)
- Remediation (1)

NB: The numbers in brackets denote a notional number of three-hour sessions for each activity.

According to this proposed delivery schedule the assessments for each of the outcomes should have the following pattern:

Outcome 1: Week 5  
Outcome 2: Week 17  
Outcome 3: Week 23

### **Open learning**

This unit could be delivered as open learning providing suitable online learning and assessment materials were developed. These could include: Video examples of lecturer demonstrations, online tutorials, sending of models and animation in production for evaluation and feedback. The challenge would be to find ways round snags in the use of software, which in a classroom situation can be quickly overcome by a brief explanation or extra class demonstration. If Open Learning candidates have to wait for answers this could hinder their workflow and cause slippage in unit delivery schedules. The computer power of a candidate's host machine and software licensing is also an issue that would need to be addressed by the centre offering this award. While scanning devices are relatively cheap, video cameras would be expensive for individuals to supply. If centres supply video cameras then this would make the unit very expensive to deliver. To avoid plagiarism issues, candidates undertaking this unit via Open Learning would be required to submit "screenshots" of work in progress to ensure the authenticity of their assessment evidence.

If this unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance. A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes. For further information and advice, please see Assessment and Quality Assurance for Open and Distance Learning (SQA, February 2001 – publication code A1030)

### **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](http://www.sqa.org.uk/assessmentarrangements).

### General information for candidates

#### Unit title: 3D Modelling and Animation

This unit is designed to enable you to plan, create models and then animate them in a 3D software environment.

In Outcome 1 you should learn about planning a 3D computer-generated animation sequence. You should learn how to write a treatment to outline a 3D animation proposal, how to use drawing and imaging skills to create a storyboard to client presentation standards, how to use drawing and/or imaging skills to create simple reference drawings for the main elements of the animation and how to write a project plan which establishes a production time scale for your 3D animation. In order to achieve a pass in Outcome 1 you need to: produce a treatment detailing such features as: Title; Duration; Target Audience; Aims; Structure; Equipment and Budget; storyboard a 30 second 3D animation with key frames; create at least three A4 reference drawings for the key scene elements/models to be generated and produce a written plan of the work to be done on a week-by-week basis.

In Outcome 2 you should learn about creating 3D computer models for an animation. You should learn how to make and modify 3D models to scale in line with reference drawings and how to surface 3D models appropriately. In order to achieve a pass in Outcome 2 you need to create at least four finished models with appropriate surfaces for inclusion in your 3D animation.

In Outcome 3 you should learn about how to create a 3D animation. You should learn how to assemble 3D models as specified by the storyboard you created, how to move models and camera positions appropriately to create an animated sequence and how to create the final rendered output in an appropriate format. In order to achieve a pass in Outcome 3 you need to: produce a 30-second 3D animation and save the animation in an appropriate format.

On completion of this unit you should be able to:

- plan a 3D computer-generated animation sequence
- create 3D computer models for an animation
- create a 3D animation