



## Higher National Unit specification

### General information

**Unit title:** 3D Animation: Lighting

**Unit code:** H49X 34

**Superclass:** JB

**Publication date:** June 2013

**Source:** Scottish Qualifications Authority

**Version:** 01

### Unit purpose

This Unit is designed to enable the learner from the 3D Animation discipline, to develop knowledge of the principles of lighting design and then apply lighting solutions in a 3D software environment.

### Outcomes

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

- 1 Research a variety of lighting types and their properties.
- 2 Analyse the application of lighting design schemes.
- 3 Incorporate lighting from a brief within a 3D file and produce a minimum 10 second computer generated 3D animation.

### Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

### Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. However, this Unit builds upon the HN Unit: *Introduction to 3D Computer Modelling and Animation*. It also expands on the terminology and techniques dealing with lighting and learners should have a sound fundamental knowledge of basic lighting allowing this Unit to embrace more advanced targeting techniques and colour changing techniques for example.

In addition a prior knowledge of how to set up a basic scene is assumed from the Unit F5GC 34 *3D Computer Modelling and Animation: An Introduction*.

## **Higher National Unit specification: General information (cont)**

**Unit title:** 3D Animation: Lighting

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

## Higher National Unit specification: Statement of standards

### Unit title: 3D Animation: Lighting

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

Research a variety of lighting types and their properties.

##### Knowledge and/or Skills

- ◆ Research
- ◆ Fundamental principles of lighting
- ◆ Lighting types
- ◆ Properties of lighting types

#### Outcome 2

Analyse the application of lighting design schemes.

##### Knowledge and/or Skills

- ◆ Lighting scheme design
- ◆ Lighting terminology
- ◆ Lighting principles
- ◆ Sources of lighting
- ◆ Lighting design aesthetics

#### Outcome 3

Incorporate lighting from a brief within a 3D file and produce a minimum 10 second computer generated 3D animation.

##### Knowledge and/or Skills

- ◆ Animation and Path Animation
- ◆ Virtual lighting tools
- ◆ Rendering tools
- ◆ Animation of lights

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

**Unit title:** 3D Animation: Lighting

### Evidence Requirements for this Unit

#### Outcome 1

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can, with reference to a particular task:

- ◆ use a minimum of three different sources of research
- ◆ accurately identify a variety of lighting types
- ◆ accurately identify the associated properties of types of lighting

#### Outcome 2

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can, with reference to three case studies, analyse:

- ◆ lighting design schemes
- ◆ fundamental lighting principles
- ◆ physical properties of light sources
- ◆ aesthetic applications of lighting schemes

#### Outcome 3

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can apply lighting to a virtual model or environment to produce a ten second animation from the supplied material incorporating:

- ◆ the creation and application of virtual lighting
- ◆ the creation of an animation path for one virtual light
- ◆ the production of at least four full colour digital renders through the camera views saved in electronic file format and located in a dedicated storage device
- ◆ the production of an animation at least ten seconds in length that meets the criteria of a supplied brief saved as a suitable file format using the appropriate rendering device and located in a dedicated storage device

The learner brief must give instructions on modifying an existing computer generated 3D scene to produce an animation with virtual lighting applied and the application of efficient rendering. Choice of the topic for the brief will be at the centres discretion but suggested topics would be an architectural style walkthrough, a gallery walkthrough or a rollercoaster ride.



## Higher National Unit Support Notes

**Unit title:** 3D Animation: Lighting

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 40 hours.

### Guidance on the content and context for this Unit

It is designed to develop the knowledge and skills of the learner in the use of lighting within a 3D modelling and visualisation environment. The Unit should encourage learners to work towards realistic workplace practices and standards, using standard hardware and software. The content of the Unit has been kept non-software specific, in order that centres may customise delivery to their own needs. Learning Outcomes 1 and 2 cover the process and Learning Outcome 3 covers the animation, allowing the learner to both learn specific software skills and techniques and apply these within the context of a subject orientated project brief.

It should be recognised that lighting is a vast subject area and that the Unit is not intended to provide specialist expertise but to develop basic knowledge and to raise the learner's awareness of lighting design both functionally and aesthetically. Learners should fully recognise the importance of lighting within computer generated 3D animation. Learners should also recognise that lighting and its effects can significantly impact on computer generated 3D animations.

### Guidance on approaches to delivery of this Unit

- ◆ Introduction to the Unit:
  - Overview of traditional lighting 3D Software Lighting Interface
- ◆ Outcome 1:
  - Lighting — principles
  - Lighting — case studies
- ◆ Outcome 2:
  - Lighting — schemes and design
  - Lighting — types
  - Lighting — case studies
- ◆ Outcome 3:
  - Incorporating lighting within a scene
  - Animating lights
  - Animation of lights along animation paths
  - Choose renderer
  - Produce animation at least ten seconds in length

## Higher National Unit Support Notes (cont)

### Unit title: 3D Animation: Lighting

This Unit has been developed as part of the HND 3D Computer Animation Group 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.

The learner's learning experience would be greatly enhanced if this Unit was delivered prior to, or along with, project-based interior or exhibition design Units.

#### Outcome 1

As learners will have limited or no knowledge of the principles of lighting, the delivery should be informative — lecture/seminar based. Content should focus on the fundamental principles of lighting, types of lighting, light sources and physical properties and aesthetic applications rather than an expert level of technical knowledge.

Guest lecturers with specialist knowledge and external site visits would be beneficial as would group tasks to encourage active discussion.

Learners should be encouraged to use a wide variety of research sources and to show initiative in finding original sources of research. The evidence produced should contain research information that shows a developing knowledge of the principles and uses of lighting and its effects on a 3D design scheme.

#### Outcome 2

External visits would be beneficial to raise awareness of the lighting scheme designs which surround us on a daily basis. Case studies could be selected by the tutor or the learner and may relate to a specific linked *Interior Design* Unit. As above, lectures, seminars and specialist guest lecturers may be appropriate in the delivery of this Outcome, as would group tasks to encourage active discussion. Tutors may be required to monitor the progress of the case study reports on a one to one basis during class time, ensuring that there is a cohesive pattern of analysis and evaluation.

#### Outcome 3

Learners could be briefed for this Outcome in conjunction with a project which would give a clear context for the investigation.

Learners' lighting scheme design ideas can be discussed on a one to one basis with the Tutor or in group discussions.

Learners should be shown lighting plans containing standard symbols and specification sheets as exemplars.

It is anticipated that the delivery of this Outcome would take about 50% of the time allocated to this Unit.

Compliance with Evidence Requirements could be recorded on a checklist.

## Higher National Unit Support Notes (cont)

**Unit title:** 3D Animation: Lighting

### 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.

The assessment for this Unit will be product based in the form of:

Outcome 1 is assessed by an investigative/research task.

Outcome 2 is assessed by responses to case studies.

Outcome 3 is assessed by a response to a given brief. Evidence includes the production of a lighting plan and the production of a 3D Computer Animation

#### Outcome 1

Evidence could be presented in any suitable format, eg written/oral illustrated report, sketchbook enquiry, digitally generated or illustrated oral presentation.

Learners should cite sources of research where appropriate.

Assessment of this Outcome is likely to be distinct from the assessment of Outcomes 2 and 3. However, knowledge gained through completion of this Outcome will contribute directly to Outcomes 2 and 3.

#### Outcome 2

Evidence could be presented in any suitable format, eg written/oral illustrated report, sketchbook enquiry, digitally generated or illustrated oral presentation.

The assessment of this Outcome can be combined with Outcome 3.

#### Outcome 3

Evidence will be presented as a completed digitally generated scene. A template file may be provided by the centre which requires the learners to apply virtual lighting and make use of the software's rendering engine.

Assessment of this Outcome is likely to be distinct from the assessment of Outcome 1 but may be assessed with Outcome 2.

## Higher National Unit Support Notes (cont)

**Unit title:** 3D Animation: Lighting

### 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](http://www.sqa.org.uk/e-assessment).

### Opportunities for developing Core and other essential skills

All elements of the Core Skill of *Problem Solving* should be naturally developed and enhanced as the Unit is completed. Learners research the types and properties of lighting available prior to developing a scale lighting plan in response to a brief. Analysing and assessing the importance of all factors influencing and affecting the design, including Health and Safety issues will develop skills in planning and critical thinking. Applying conclusions to produce a specification board containing images and manufacturers' information on light fittings selected and colour sketches of lighting design effects within the scheme will involve a sophisticated level of creative thinking. Critical reflection and consideration of the success of the design solutions could be encouraged in discussion with the assessor in order to reinforce analytical and evaluative approaches to *Problem Solving* in working practice.



## History of changes to Unit

Version	Description of change	Date

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## General information for learners

### Unit title: 3D Animation: Lighting

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.

This Unit is designed to enable you to create and apply lighting solutions in a 3D software environment.

In **Outcome 1** you will investigate a variety of lighting types and sources enabling you to identify these and understand their associated properties.

In **Outcome 2** you will analyse examples of lighting scheme design and produce reference information that will be used as a source of inspiration and information.

In **Outcome 3** you should learn how to use virtual lights to modify an existing computer generated 3D scene, this can be a scene previously created by the learner or supplied by the centre. You should learn how to use animation paths and select and apply efficient rendering engines using a variety of software exercises and tutorials.

In order to achieve Outcome3 you need to:

- (a) Produce an appropriately lit and visualised ten second animation saved as an appropriate file format and stored to a suitable location.
- (b) Clearly show the use of at least one animation path for a virtual light.
- (c) Produce the animation using the appropriate rendering device.

All elements of the Core Skill of *Problem Solving* and *Information Technology* should be naturally developed and enhanced as the Unit is completed.

*Problem Solving* is used in interpreting the briefs and manipulating and modifying the animated solutions. *Information Technology* skills may also be developed when using different file types and transferring and saving files