SQA Advanced Unit Specification

General information for centres

Unit title: Architectural CADT: Advanced Digital Media (SCQF level 8)

Unit code: HR78 48

Superclass: TD

Publication date: August 2017

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed to enable learners to advance their knowledge and skills in the visualisation and presentation of conceptual architectural projects. It will develop established and introduce new portfolio production skills, in the realisation of high-end graphical presentations relevant to the marketing and promotional sectors of architectural projects.

Outcomes

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

1 Select and prepare photographic images for inclusion in presentation material.
2 Prepare scenes of a computer-generated architectural project for inclusion in presentation material.
3 Use bitmap and vector imaging techniques to realise architectural visualisations in the creation of composite architectural visualisation graphics.
4 Produce a completed portfolio of brochure-quality visualisation graphics using desktop publishing software, or similar medium, and present the finished work to a client group.

Credit points and level

1 SQA Advanced Credit at SCQF level 8: (8 SCQF credit points at SCQF level 8)

Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. However, it would be beneficial if learners had some CAD and visualisation skills prior to undertaking this Unit. This may be demonstrated by possession of the following SQA Advanced Units:

HR6P 47 *Architectural CADT: Principles and Practic*e
HR6M 47 *Architectural CADT: Residential Design*
HR6H 47 *CAD: Visualisation, Rendering and Presentation*

or equivalent SCQF level 7 qualification

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**.

SQA Advanced Unit specification: statement of standards

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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

Select and prepare photographic images for inclusion in presentation material.

Knowledge and/or skills

- visual communication
- image resolution
- image file formats
- view matching

Outcome 2

Prepare scenes of a computer generated architectural project for inclusion in presentation material.

Knowledge and/or skills

- current and emerging trends within architectural visualisation
- planning creative solutions
- visual communication
- materials
- lighting
- cameras
- view matching techniques

Outcome 3

Use bitmap and vector imaging techniques to realise architectural visualisations in the creation of composite architectural visualisation graphics.

Knowledge and/or skills

- planning
- bitmap editing tools
- text
- image file formats
- resolution

Outcome 4

Produce a completed portfolio of brochure-quality visualisation graphics using desktop publishing software, or similar medium, and present the finished work to a client group.

Knowledge and/or skills

- presentation media
- desktop publishing software
- communication

Evidence Requirements for this Unit

Outcome 1

Evidence will be generated through assessment undertaken in controlled, open-book conditions and as such learners will be allowed to refer to relevant course material. The time allocation for the individual assessment is a maximum of **one** hour. Where an integrated assessment is utilised, the time allocated will be **eight** hours.

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

- select a suitable range of project photographs to enable the visual communication of a completed 3D conceptual building design model within a given location
- prepare the selected location photographs by means of appropriate image correction techniques
- prepare the images for a chosen display medium by adjusting the image resolution to an appropriate level
- prepare the corrected project photographs for future use by saving the images in a format appropriate to the chosen display medium

Outcome 2

Learners will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can, recognising current and emerging trends within architectural visualisation:

- identify and prepare a 3D computer-generated conceptual model for the visualisation activity
- plan a creative visualisation strategy through sketches, log or similar reflecting current and emerging trends within architectural visualisation
- using view-matching techniques position a camera or view appropriate to the images prepared in Outcome 1
- render the conceptual architectural building model to match the appropriate content of the images created in Outcome 1

Evidence must be generated through assessment undertaken in controlled, open-book conditions and as such learners should be allowed to refer to relevant course material. The time allocation for the individual assessment is a maximum of **two** hours with an additional one hour for any new building models created. Where an integrated assessment is utilised, the time allocated will be **eight** hours plus an additional one hour for any additional building models created.

Outcome 3

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

- create at least three professional standard, brochure-quality composite images visualising the conceptual architectural project within an existing location

Evidence must be generated through assessment undertaken in controlled, open-book conditions and as such learners should be allowed to refer to relevant course material. The time allocation for the individual assessment is a maximum of **two** hours. Where an integrated assessment is utilised, the time allocated should be **eight** hours.

Outcome 4

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

- use desktop publishing software to manipulate brochure-quality graphics and media
- evaluate a range of communication media for presentation purposes
- create a brochure-quality presentation layout in a format appropriate to the presentation medium
- present the finished work to a client group

Evidence must be generated through assessment undertaken in controlled, open-book conditions and as such learners should be allowed to refer to relevant course material. The time allocation for the individual assessment is a maximum of **three** hours. Where an integrated assessment is utilised, the time allocated should be **eight** hours.

SQA Advanced Unit support notes

Unit title: Architectural CADT: Advanced Digital Media (SCQF level 8)

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

This Unit has been designed to enable learners to develop knowledge, understanding and skills in advanced digital media within an architectural computer-aided design environment.

This Unit is at SCQF level 8 and has been devised as part of the SQA Advanced Diploma in Computer Aided Architectural Design and Technology. However, this does not preclude the use of the Unit in other awards where award designers feel this to be appropriate.

In designing this Unit, a range of topics have been identified that would be expected to be covered by lecturers. There are also recommendations as to how much time should be spent on each Outcome assessment. This has been done to help lecturers decide what depth of treatment should be given to the topics attached to each of the Outcomes.

This Unit is practical in nature and should be delivered in a way that reflects the workflow process in industry. Every attempt should be made to place the subject in context by analysing existing work from a range of sources such as previous learner submissions and industry portfolios.

Outcome 1

Outcome 1 introduces the theory behind view matching techniques and factors affecting image suitability for use in view matching. Learners could make use of this information while planning their visualisation strategy for Outcome 2.

Other relevant information should be explained:

- visual communication:
  - previous learner submissions
  - industry portfolio
- resolution:
  - suitable resolutions for print and electronic graphics
- image file formats:
  - the differences in quality from RAW, JPEG and Tiff or similar
- image correction:
  - lens distortion

Outcome 2

This Outcome introduces current and emerging trends in the visualisation of architectural projects within the promotional and marketing sectors. Software used could allow both the modelling aspect and also permit the positioning and properties of a camera to be defined by

the learner. Learners should already possess the basic modelling and visualisation skills required to create a conceptual model and apply the appropriate materials and lighting to the scene.

- investigation of current trends in architectural promotional material
- planning:
  - using a log or sketch book to record and communicate visualisation ideas
- positioning cameras making use of camera meta data:
  - distance from landmark
  - direction
  - height
  - tilt angle
  - focal length and conversion to 35 mm (* 1.6 etc)
- appropriate render formats

Outcome 3

This Outcome 3 looks at the principal methods used to merge multiple images to realise a conceptual visualisation. This could include but is not limited to:

- bitmap editing tools:
  - scaling
  - masks
  - opacity
  - layers
  - cloning
- text
- optical distortion correction

Dedicated presentation graphics CAD applications such as Autodesk Impressions or similar could be used where available, with photo editing applications such as Adobe Photoshop or similar used as an alternative.

Outcome 4

This Outcome guides learners towards the most appropriate medium to present their completed graphics; this could be achieved by the tutor undertaking the role of client. The learner should be provided with enough information to permit a suitable choice of final presentation media such as:

- printed brochure
- printed presentation poster
- electronic showreel

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 or professional knowledge and skills for employment within an architectural design/technology environment.

It is intended that this Unit be presented at all times using the specialist application CAD software available at the centre. Appropriate technical and support material should be available to the learner.

It is recommended that in the delivery of this Unit, learners be provided with the opportunity to gain as much 'hands-on' experience as possible. Each learner should have access to a PC with the CAD software installed.

Details on approaches to assessment are given under Evidence Requirements under each Outcome in the *SQA Advanced Unit specification, statement of standards* section. It is recommended that these sections be read carefully before proceeding with assessment of learners.

Where available, evidence from the workplace can be incorporated to enhance the Outcomes, provided that this evidence is appropriate and authenticated as the learner's own work.

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.

Assessment for this Unit could be delivered as one single project-based assessment covering all four Outcomes. Industry practice should be reflected wherever possible, so learners should be encouraged to plan the visualisation of the designs thoroughly before commencing any practical activities for the assessments; this could be through the use of sketches, storyboards, a log or similar.

Assessment guidelines

Outcome 1

Learners could be provided with a series of photographs of a location along with the relevant information required to enable view-matching of a 3D model to the photograph. However learners could be encouraged to take their own photographs of a location where they have the ability to do so. They could use evidence generated in the SQA Advanced Unit HR78 48 *Photography: Architecture*, if it meets the criteria of the Outcome.

It is recommended that the assessment for this Outcome be combined with 2, 3 and 4 as part of a project-based assessment instrument for this Unit. The assessment for this Outcome could also be carried out separately; this is at the discretion of the presenting centre.

It is recommended that centres develop checklists to support the assessment requirements for each of the knowledge and/or skills items.

Outcome 2

The conceptual model used for assessment could be provided by the lecturer, or an existing architectural building model produced by the learner through other Units in the SQA Advanced Diploma in Architectural CADT, however no more than one hour should be spent creating a new model. This could be achieved by limiting any new models created to a conceptual 'mass' model with little or no detailing.

It is recommended that the assessment for this Outcome be combined with 1, 3 and 4 as part of a project-based assessment instrument for this Unit. The assessment for this Outcome could also be carried out separately; this is at the discretion of the presenting centre. It is recommended that centres develop checklists to support the assessment requirements for each of the knowledge and/or skills items.

Outcome 3

This assessment could be in the form of a photo-realistic render, seamlessly blended to match the existing location. It could also be a one colour conceptual mass model designed to stand out from the rest of the buildings in the photograph, however the lighting and view should be matched to the existing structures.

It is recommended that the assessment for this Outcome be combined with 1, 2 and 4 as part of a project-based assessment instrument for this Unit. The assessment for this Outcome could also be carried out separately; this is at the discretion of the presenting centre. It is recommended that centres develop checklists to support the assessment requirements for each of the knowledge and/or skills items.

Outcome 4

- the format chosen could be reflective of the initial consultation process which may state the end use of the graphics such as a presentation stand, brochure, poster, electronic showreel or similar

It is recommended that this Outcome uses the source material used in Outcomes 1 to 3, and the assessment for be combined with 1, 2 and 3 as part of a project-based assessment instrument for this Unit. The assessment for this Outcome could also be carried out separately; this is at the discretion of the presenting centre. It is recommended that centres develop checklists to support the assessment requirements for each of the knowledge and/or skills items.

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**.

Opportunities for developing Core and other essential skills

There are opportunities to develop the Core Skills of *Communication, Problem Solving and Information and Communication Technology (ICT)* all to SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Problem Solving is used in manipulating and modifying animated solutions. IT skills are used when using different file types, transferring files and using different software applications to produce high-end graphics.

History of changes

Version	Description of change	Date

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced qualifications.

FURTHER INFORMATION: Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our Centre Feedback Form.

General information for learners

Unit title: Architectural CADT: Advanced Digital Media (SCQF level 8)

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 has been designed to provide you with the knowledge and skills that will enable you to visualise conceptual architectural projects within an existing location. Using a variety of professional techniques, you will produce a series of high quality presentation graphics and present them in a format as specified in a given brief.

Throughout the Unit, emphasis may be placed upon the realisation of conceptual design projects rather than producing technically correct details.

The Unit may be taught with a series of lectures, practical exercises and design tutorials, which will logically, and sequentially progress knowledge and skills from the simple to the complex. At all times, a strong design base may underpin your learning and assessment.

It is imperative that you develop your technical knowledge within this Unit so learning within the Unit builds upon other knowledge and skills. As you may begin the Unit with a range of existing CAD skills, you will advance with new tools and techniques to develop 2-dimensional vector and bitmap and 3-dimensional CAD visualisation skills as well as skills in using Desktop Publishing software to produce a brochure-quality presentation layout.

There are four formal assessment events, which may be integrated. The greater element of assessment time and effort will be on the practical production of visualisation solutions appropriate to a given brief. The evidence for all the practical assessment events may be integrated into a single document or presentation, although other approaches are possible.

Assessments will be conducted under open-book conditions in which you will be allowed access to notes, textbooks and other material during the assessment. You will sit these assessments at prescribed points during the Unit at the discretion of the lecturer.

As you will be working consistently within an IT-based platform, opportunities exist within this Unit for you to develop Core Skills in *Communication, Information and Communication Technology (ICT)* and *Problem Solving* to SCQF level 6.