

SQA Advanced Unit Specification

General information for centres

Unit title: CAD: Digital Collaboration Practices (SCQF level 8)

Unit code: HR7T 48

Superclass: VF

Publication date: August 2017

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed to develop learners' knowledge of collaborative working as it applies to computer-aided design through a mixture of theory as well as practical application. The Unit will examine collaboration through a series of practical tasks which will see the learner set up, manage and update digital files on a collaborative working platform.

This Unit is primarily aimed at learners who wish to work collaboratively with digital files such as engineering or construction computer-aided design, although may be of interest to learners of other disciplines.

Outcomes

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

- 1 Explain the key principles and benefits of working collaboratively on a design project.
- 2 Set up and populate a centralised common data environment.
- 3 Investigate and identify issues from a collaborative digital file and feedback to stakeholders.
- 4 Download and make changes to digital files from a centralised common data environment and update master files.

Credit points and level

2 SQA Advanced Credits at SCQF level 8: (16 SCQF credit points at SCQF level 8)

Recommended entry to the Unit

Entry to this Unit is at the discretion of the centre. However, it is recommended that learners possess a knowledge and understanding of computer-aided design and design processes. This may be evidenced by the possession of the SQA Advanced Units HV1G 47 CAD: *Feature-Based Modelling I*, or HR3L 47 CAD: *2D I*.

Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skill *Problem Solving* at SCQF level 6

Core Skill component None

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill None

Core Skill component *Working Co-operatively with Others* at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the support notes of this 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 Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from the SQA Advanced subject-specific pages on SQA's website (www.sqa.org.uk/sqa).

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

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

Explain the key principles and benefits of working collaboratively on a design project.

Knowledge and/or skills

- ◆ collaborative working
- ◆ responsibilities of individuals and professions involved in a collaborative project
- ◆ cloud-based project files
- ◆ recording changes to collaborative digital files
- ◆ security of digitally stored files

Outcome 2

Set up and populate a centralised common data environment.

Knowledge and/or skills

- ◆ collaborative project
- ◆ assign and manage user permissions
- ◆ manage project data
- ◆ project coordination
- ◆ upload digital files to a centralised project

Outcome 3

Investigate and identify issues from a collaborative digital file and feedback to stakeholders.

Knowledge and/or skills

- ◆ drawing markup
- ◆ version control
- ◆ project lifecycles
- ◆ recording
- ◆ republish digital files
- ◆ collaborative communication

Outcome 4

Download and make changes to digital files from a centralised common data environment and update master files.

Knowledge and/or skills

- ◆ record milestones
- ◆ manage revisions
- ◆ respond to markup comments to a shared CAD file
- ◆ republish corrected digital files

Evidence Requirements for this Unit

Evidence for the knowledge and/or skills in this Unit can be generated on an Outcome-by-Outcome basis or as part of a combined assessment event, under controlled, supervised, open-book conditions. Learners should be allowed to refer to relevant course material as well as current standards. Learners will need to provide written and/or oral recorded and graphical evidence to demonstrate their knowledge and/or skills across all Outcomes by showing that they can:

Outcome 1

- ◆ explain how different professionals work collaboratively during the design phase and how that might be a benefit in terms of cost or time to the project
- ◆ explain why it is important to define the responsibilities of a team at the start of a project
- ◆ explain the benefits of a centralised project collaboration setup
- ◆ explain how changes to a collaboratively shared CAD file are recorded and why this is required
- ◆ explain how the security of project files may be threatened by online storage

Outcome 2

- ◆ set up a collaborative working environment
- ◆ assign and manage user permissions to a collaborative working environment
- ◆ update project log
- ◆ upload digital CAD files to a collaborative working environment

Outcome 3

- ◆ work collaboratively to highlight changes to be made to an existing digital file
- ◆ provide design feedback through a drawing markup on a collaborative project
- ◆ republish an edited drawing to a collaborative project while maintaining version control

Outcome 4

- ◆ respond to markup comments to a shared CAD file
- ◆ change the status of markups
- ◆ republish an updated CAD file to a collaborative working environment
- ◆ record milestones
- ◆ record any revision to shared CAD files
- ◆ access and download files stored collaboratively
- ◆ make recommended changes to CAD files
- ◆ complete CAD drawings using third party files

SQA Advanced Unit support notes

Unit title: CAD: Digital Collaboration Practices (SCQF SCQR 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 80 hours.

Guidance on the content and context for this Unit

It is more or less accepted that digital design is a truly global process that may well be utilised in every country in the world. Design teams work together and collaborate across different time zones as well as across geographical borders. This global collaboration process brings new communication, control and security challenges.

This Unit has been designed in order to allow learners to develop the fundamental knowledge and essential understanding of the terminology, technology and principles of collaboration on digital projects through practical hands on learning.

While drawings should be correct, the production of drawings to industry standards is not the intended focus of this Unit. The delivery of this Unit should focus on the practical tasks of working collaboratively underpinned by digital technologies which encourage the collection and re-use of project data and 3-dimensional models to reduce the risk of error and cost.

Outcome 1 should provide learners with the opportunity to better their overall understanding of the theory, terminology and overarching principles of a collaborative project. A case study could be used to communicate:

- ◆ managing project data
- ◆ sharing rights
- ◆ project coordination
- ◆ lean construction
- ◆ cost control
- ◆ re-using project data

Outcome 2 should provide learners with the opportunity to better their overall understanding of the process of setting up a collaborative project through practical application. Roles and permissions could include but are not limited to:

- ◆ owner
- ◆ administrator
- ◆ member
- ◆ project moderator
- ◆ contributor

Outcome 3 should provide learners with the opportunity to better their overall understanding of the review and markup process as well as the recording of communication that exists during a collaborative project. The Unit writer envisioned a complex and large project being supplied to learners. This project could contain issues such as elemental collisions which the learners should work to solve. The file should be complex and large enough to provide them with the experience and problematic issues which arise when working with and sharing large digital files.

Outcome 4 should provide learners with the opportunity to better their overall understanding of making changes to a collaborative CAD file as well as the recording of milestones, revisions and version numbers. The Unit writer envisioned the Unit lecturer communicating with learners through a common data environment throughout the entirety of the project. This could be exercise and assessment instruction and feedback as well as signing off completed Outcomes.

This SCQF level 8 Unit is an optional Unit within the SQA Advanced Certificate/SQA Advanced Diploma Computer Aided Draughting and Design, and SQA Advanced Certificate/SQA Advanced Diploma Computer Aided Architectural Design and Technology Group Awards. However, this does not preclude the use of the Unit in other Group Awards where award designers feel this to be appropriate. The design of this Unit allows for content to be contextualised within topics which allow for a simulation of working practices when preparing a response to a client brief.

Guidance on approaches to delivery of this Unit

It is expected that this Unit be delivered once learners are proficient in the use of CAD. This can be demonstrated with the satisfactory completion of SQA Advanced Units in CAD such as HR3L 47 *CAD: 2D I*, and HV1G 47 *CAD: Feature-Based Modelling 1*.

This Unit could be delivered by a combination of lecturing, group work and investigation (using case studies, journals and the internet), although there should be a focus on the practical tasks. Where possible, past students now working with collaborative projects could be invited to give guest lectures on their projects.

Guidance on approaches to assessment of this Unit

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

Outcome 1 could be assessed by means of a series of short answers to structured questions, a formal report or a presentation addressing all components of the knowledge and/or skills.

Use of a case study would allow centres to integrate Outcomes 2, 3 and 4 into a whole or combination of Outcomes.

Assessments should be carried out in controlled, supervised, open-book conditions. Learners should be allowed to refer to relevant course material as well as current standards such as British Standards/Publicly Available Standards. There may be opportunity for investigations to be conducted by groups, however any individual written or presented work produced for assessment should be authenticated.

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

Learners may have opportunities to develop the Core Skills of *Communication* and *Working with Others* at SCQF level 6 in this Unit.

Communication (Written) could be achieved by producing a report covering Outcome 1, while *Communication* (Oral) could be achieved if this information was presented orally. The Core Skill of *Working with Others* could be achieved by working on a collaborative case study across Outcomes 2, 3 and 4.

This Unit has the Core Skill of Problem Solving embedded in it, so when learners achieve this Unit their Core Skills profile will be updated to show that they have achieved Problem Solving at SCQF level 6.

This Unit has the *Working Co-operatively with Others* component of *Working with Others* embedded in it. This means that when learners achieve the Unit, their Core Skills profile will also be updated to show they have achieved *Working Co-operatively with Others* at SCQF level 6.

History of changes

Version	Description of change	Date

© Scottish Qualifications Authority 2016, 2017

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.

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: CAD: Digital Collaboration Practices (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.

It is more or less accepted that digital design is a truly global process that may well be utilised in every country in the world. Computer-aided design teams work together and collaborate across different time zones as well as across geographical borders. This global collaboration process brings new communication, control and security challenges.

This Unit has been designed in order to allow you to develop the fundamental knowledge and essential understanding of the terminology, technology and principles of collaboration on digital projects through practical hands on learning.

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

- 1 Explain the key principles and benefits of working collaboratively on a design project.
- 2 Set up and populate a centralised common data environment.
- 3 Investigate and identify issues from a collaborative digital file and feedback to stakeholders.
- 4 Download and make changes to digital files from a centralised common data environment and update master files.

The Unit may be delivered by a balance of lecturing, group work, investigation work, and computer simulation.

The knowledge and/or skills in this Unit will be assessed under controlled, supervised open-book conditions. You will be allowed to refer to relevant course material. Assessment may comprise of a combination of written work and/or presentations as well as a series of practical tasks. In order to complete the Unit successfully you will have to achieve a satisfactory level of performance in the assessment event/s.

You may have opportunities to develop the Core Skills of *Communication* and *Working with Others* at SCQF level 6 in this Unit.

This Unit has the Core Skill of *Problem Solving* embedded in it, so when you achieve this Unit your Core Skills profile will be updated to show that you have achieved *Problem Solving* at SCQF level 6.

This Unit has the *Working Co-operatively with Others* component of *Working with Others* embedded in it. This means that when you achieve the Unit, your Core Skills profile will also be updated to show you have achieved *Working Co-operatively with Others* at SCQF level 6.