



## Higher National Unit specification

### General information

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

**Unit code:** HE2A 34

**Superclass:** VF

**Publication date:** May 2016

**Source:** Scottish Qualifications Authority

**Version:** 02

### Unit purpose

The purpose of this Unit is to introduce learners to the roles and organisational structures of a drawing office. Learners will investigate and identify the procedures of a drawing office. Then as a drawing office group they will participate in drawing, sharing and modifying drawings, to a client brief, following a set of procedures agreed and created by the group.

This is an optional Unit within the HNC and HND in Computer Aided Draughting and Design Group Awards, but can also be taken as a stand-alone Unit. This Unit is suitable for learners who would like to pursue a career in CAD.

### Outcomes

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

- 1 Identify and explain the key roles and organisational structure of a drawing office.
- 2 Identify and explain the content of a Drawing Office Manual.
- 3 Develop a Drawing Office Manual.
- 4 Prepare drawings to clients brief in line with drawing office procedures.
- 5 Hold a client meeting and modify drawings.

### Credit points and level

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

## Higher National Unit Specification: General information (cont)

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

### Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. However, it is recommended that learners possess basic knowledge and understanding of computers and technical drawing. This may be evidenced by possession of:

- ◆ H27V 76: *2D Graphic Communication* or equivalent
- ◆ F5H5 12: *Computer Aided Draughting (CAD)* for Engineers
- ◆ FT8M 12: *Drawing Office Practice*
- ◆ Relevant industrial experience of Computer Aided Draughting and Design

### 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

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

### 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:** CAD: Drawing Office Practice (SCQF level 7)

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

Identify and explain the key roles and organisational structure of a drawing office.

#### Knowledge and/or Skills

- ◆ Key roles and responsibilities in a drawing office
- ◆ Communication methods used within a drawing office
- ◆ Organisational structure
- ◆ Influences of external factors and professionals

### Outcome 2

Identify and explain the content of a Drawing Office Manual.

#### Knowledge and/or Skills

- ◆ Key sections contained within a manual
- ◆ Drawing office standards used to control the creation of data in the drawing office
- ◆ Drawing office register to control the issue of and modification of drawings
- ◆ Controlled procedures

### Outcome 3

Develop a Drawing Office Manual.

#### Knowledge and/or Skills

- ◆ Key sections
- ◆ Drawing office standards
- ◆ Drawing office register
- ◆ Controlled procedures
- ◆ Teamwork

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

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

### Outcome 4

Prepare drawings to clients brief in line with drawing office procedures.

#### Knowledge and/or Skills

- ◆ Detail drawings
- ◆ Update drawing office register
- ◆ File management and sharing of drawings in line with drawing office procedures

### Outcome 5

Hold a client meeting and modify drawings.

#### Knowledge and/or Skills

- ◆ Formal meeting
- ◆ Modify and revise drawings
- ◆ Collation of drawings for completion of project
- ◆ Update documentation
- ◆ Evaluate drawing office manual

#### Evidence Requirements for this Unit

The assessment for this Unit can be done on an Outcome by Outcome basis or as part of a combined assessment event.

Evidence for the Knowledge and/or Skills in this Unit should be generated under controlled, supervised open-book conditions. Learners should be allowed to refer to relevant course material.

### Outcome 1

Learners will need to provide written and/or oral recorded evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ identify and explain key internal roles within a drawing office.
- ◆ explain the responsibilities of the identified roles.
- ◆ identify and explain the lines of communication and associated documentation between the key roles.
- ◆ identify and explain a suitable organisational structure with the use of a chart.
- ◆ identify and explain external factors and professionals and describe the influences they have on a drawing office.

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

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

### Outcome 2

Learners will need to provide written and/or oral recorded evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ identify and explain key sections of the drawing office manual.
- ◆ identify and explain drawing office standards for the drawing office manual.
- ◆ identify and explain the purpose and content needed for a drawing office register.
- ◆ identify and explain the necessary controlled procedures in a drawing office with regards to filenames, file management, checklists and drawing revisions.

### Outcome 3

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

- ◆ produce, develop and format a drawing office manual document containing:
  - key sections
  - set of drawing office standards
  - drawing office register
  - checklists for necessary drawing office controlled procedures.
- ◆ communicate and work as part of a team during the production of the above drawing office manual.

### Outcome 4

In line with the Drawing Office Manual, learners will need to provide performance evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ prepare detail drawings in an industrial CAD Software following a client brief (Minimum three OFF per group).
- ◆ add the detail drawings to the drawing office register to enable others to locate the drawings.
- ◆ provide evidence that the drawing office standards have been followed by completing a checklist.
- ◆ provide evidence that drawings have been filed, managed and shared in line with control procedures.

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

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

### Outcome 5

In line with the drawing office manual, learners will need to provide performance evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ role play a meeting of at least 15 minutes with a client presenting the drawings prepared in Outcome 4.
- ◆ modify and revise the drawing to the clients new requests in accordance with the procedures in the drawing office manual.
- ◆ prepare general arrangement drawings using the modified detail drawings (Minimum one OFF per group).
- ◆ update documentation and the drawing register.
- ◆ evaluate the drawing office manual and its procedures and identify any modifications that could be made.



## Higher National Unit Support Notes

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

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 SCQF level 7 Unit is an optional Unit in the HNC and HND Computer Aided Draughting and Design Group Awards. It can also be taken as a stand-alone Unit.

This Unit has been designed to introduce the learner to the roles, responsibilities and organisational structures within a drawing office. Learners will investigate and identify the procedures and documentation that are necessary for an industrial drawing office to function. Then as a drawing office group they will participate in a project scenario with a formal meeting, producing, sharing and modifying drawings, to a client brief, following a set of procedures.

On completion of the Unit, learners should have gained a practical insight into aspects of drawing office practice including the key roles, their responsibilities, communication pathways and organisational structure of several sizes of drawing offices. Furthermore, learners should gain awareness of the procedures, documentation and standards that drawing offices have.

### Guidance on approaches to delivery of this Unit

The Unit should draw on the learners' knowledge and experience gained from other Units they have completed or are taking at the same time as this Unit and develop further understanding of drawing offices in industry. It is predicted that 15% of the time will be spent on Outcome 1 ensuring that the learner has the knowledge and understanding of what is involved in the key roles and organisational structure of a drawing office. 45% of the time will be spent on Outcomes 2 and 3 ensuring that the learner has the knowledge and understanding of what is involved in the content and structure of a drawing office manual. 40% of the time will be spent on Outcomes 4 and 5, ensuring that the learner has the knowledge and understanding of what is involved in following a client brief and the procedures in the drawing office manual from Outcomes 2 and 3.

Guest talks from experienced professionals are recommended as well as visits to relevant drawing offices. Tutors can advise learners on the choice of suitable source materials that best fulfils the criteria of the Unit.

## Higher National Unit Support Notes (cont)

**Unit title:** CAD: Drawing Office Practice (SCQF level 7)

### Outcome 1

Through lectures and tutorial work, learners will gain knowledge of the roles, communication documentation, and organisation of a drawing office and the influences of external factors. With tutorials, reinforcement of understanding will take place.

### Outcomes 2 and 3

Through lectures and tutorial work, learners will gain knowledge of the content and purpose of a drawing office manual including, its key sections, drawing office standards, drawing office register and necessary controlled procedures that are required in a drawing office.

Centres can introduce exemplar materials of drawing office manuals created and used in industry for discussion and context.

### Outcomes 4 and 5

The focus should be on the procedures involved in the sharing of drawings and making revisions, rather than overly complex drawings. Learners could be organised into groups with identifiable responsibilities, which are representative of the modern drawing office organisation. Centres can introduce exemplar material of original and revised drawings created and used in industry for discussion and context.

The drawing office manual and revision procedures produced in Outcome 2 and 3 should be followed in Outcomes 4 and 5 where drawings are produced.

This Unit could be integrated with other Units assessing the learner's ability to create CAD drawings.

In Outcome 5 the client could be a lecturer from the same or different but related department or subject for example an engineering lecturer, or an architectural lecturer.

## 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.

A suitable approach of assessment for this Unit would be a folio of documentation and drawings that could be identified by a series of assessment tasks designed to assess the learner's understanding and abilities, all under open-book conditions.

There are opportunities to combine assessments of Outcomes 2 and 3, and the practical assignments of Outcomes 4 and 5, individual centres may choose to exploit these opportunities as centre demands dictate.



## Higher National Unit Support Notes (cont)

### Unit title: CAD: Drawing Office Practice (SCQF level 7)

In Outcome 4 detail drawings could be:

- ◆ architectural: doors, windows and details in orthographic projection
- ◆ engineering: part, component specification, machine, details in orthographic projection

In Outcome 5 assembly drawings could be:

- ◆ architectural: plans, elevations, site plans, location plans and servicing drawings.
- ◆ engineering: assembly, exploded assembly, schematics.

Checklists should be completed and retained by the centre.

While group work may be utilised during learning, teaching and assessment, lecturers must be satisfied that the evidence submitted is the work of individual learners.

### 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

Learners will have opportunities to develop the Core Skills of *Communication, Information and Communication Technology (ICT)* and *Working with Others* at SCQF level 6 in this Unit. There will also be opportunities to develop the Core Skills components of *Numeracy (Using Graphical Information)* and *Problem Solving (Critical Thinking and Reviewing and Evaluating)* at SCQF level 6.

Outcome 3 provides learners with opportunities to develop Core Skills including; *Problem Solving (Critical Thinking, Reviewing and Evaluating)*, *Communication* and *Information and Communication Technology (ICT)*. Additionally learners benefit from discussions with the class group and/or assessor in order to encourage analytical evaluation of approaches to the design process.

## Higher National Unit Support Notes (cont)

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During Outcomes 4 and 5 learners work to a remit which requires the ability to create and manipulate objects in a computer aided design environment. This provides them with opportunities to develop the Core Skills of *Problem Solving* (Critical Thinking, Reviewing and Evaluating), *Working with Others*, *Communication* and *Numeracy* (Using Graphical Information). Using IT platforms and manipulating numerical data will also develop the Core Skill of *Information and Communication Technology*. Learners should also be able to work unaided in correct file management: considerations of security and safety should be a routine aspect of good practice.

The specific Knowledge and Skills developed within this Unit will support a learner's employability development, as employers seeking a draughtsperson, look for people with problem solving and numeracy knowledge and skills.

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.

## History of changes to Unit

Version	Description of change	Date
02	Core Skill Problem Solving at SCQF level 6 embedded.	19/08/2016

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## General information for learners

### Unit title: CAD: Drawing Office Practice

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 introduce you to the roles, responsibilities and organisational structures within a drawing office. You will investigate and identify the procedures and documentation that are necessary for an industrial drawing office to function. Then as a drawing office group you will participate in a project scenario with a formal meeting. Following a set of procedures the group will produce, share and modify drawings to a client brief.

The Outcomes covered in this Unit are:

- 1 Identify and explain the key roles and organisational structure of a drawing office.
- 2 Identify and explain the content of a Drawing Office Manual.
- 3 Develop a Drawing Office Manual.
- 4 Prepare drawings to clients brief in line with drawing office procedures.
- 5 Hold a client meeting and modify drawings.

The assessments will be supervised and conducted under open-book conditions and you will be allowed to refer to relevant course material.

As you are likely to be working in a team it is envisaged that one project will be submitted per team and that the formal meeting will involve all team members. It is anticipated that the formal meeting will last for at least 15 minutes.

This is partly a practical Unit requiring you to have individual access to a CAD system. A CAD system is defined as hardware and software, which will enable an operator to generate (and regenerate) drawings at an acceptable processor speed. A typical minimum hardware configuration would be a current single user PC fitted with suitable peripherals attached such as a printer/plotter to produce hard copies of your work. Alternatively other configurations such as networked CAD stations are acceptable provided they can satisfy the Unit's criteria.

There will also be opportunities to develop the Core Skills of *Communication, Information and Communication Technology(ICT)* and *Working with Others* as well as components of *Numeracy (Using Graphical Information)* and *Problem Solving (Critical Thinking and Reviewing and Evaluating)* at SCQF level 6.

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.