



## Higher National Unit specification

### General information for centres

**Unit title:** Carpentry and Joinery: Windows and Screens

**Unit code:** F8P2 34

**Unit purpose:** This Unit is designed to enable a candidate to develop their knowledge and understanding of window and screen manufacture and to apply timber technology to the design and specification of windows and screens, setting out, and adopting safe working practices in the manufacture of a timber window sash with a segmental curve to the underside of the top rail.

On completion of this Unit the candidate should be able to:

- 1 Demonstrate knowledge and understanding of window and screen construction.
- 2 Manufacture and hang a timber window sash to a given specification.
- 3 Research, design and cost a timber screen.

**Credit points and level:** 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7\*)

*\*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 Access 1 to Doctorates.*

**Recommended prior knowledge and skills:** Access to this Unit will be at the discretion of the centre. It would be beneficial if candidates have successfully completed the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 6 (G9AR 46) or have the equivalent level of industrial experience and prior learning.

**Core Skills:** There are opportunities to develop the Core Skills of *Problem Solving, Working with Others, Communication, Information and Communication Technology* and *Numeracy* at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

**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. This Unit was developed as part of the Professional Development Award in Carpentry and Joinery at SCQF level 7 and is aimed at candidates following a career in Carpentry and Joinery and receiving complementary industrial experience.

## General information for centres (cont)

**Assessment:** Assessment of Outcome 1 may be completed by using a combination of matching exercises and restricted response questions. These exercises and questions will cover: component selection; specification of timber; selection of joints and joint retention.

Assessment of Outcome 2 will be completed through observation of a practical exercise; this will include drawing a full size workshop rod and manufacturing and hanging a window sash.

Assessment of Outcome 3 may be completed using an open-book assignment which will include: the design of a timber and glass screen; producing a sequence of operations; the production of a materials list; the costing of the materials required and the production of scale drawings;

Please note that candidates must achieve all the minimum evidence specified for each Outcome in order to pass this Unit.

The assessment instrument used should follow the assessment guidelines specified for each of the Outcomes. Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Carpentry and Joinery Training and Assessment Programme (TAP) SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.

Accurate records should be made of the assessment instruments used showing how evidence is generated for each Outcome and given marking schemes, checklists and recorded candidate feedback. Records of candidates' achievements should be retained. These records must be made available for external verification.

## Higher National Unit specification: statement of standards

**Unit title:** Carpentry and Joinery: Windows and Screens

**Unit code:** F8P2 34

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

### Outcome 1

Demonstrate knowledge and understanding of window and screen construction

#### Knowledge and/or Skills

- ◆ Window construction components
- ◆ Window construction joint types
- ◆ Methods of joint retention
- ◆ Appropriate use of timber types
- ◆ Modern window and screen manufacturing methods
- ◆ Sustainability considerations

#### Evidence Requirements

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

- ◆ select at least **three** components for specific use in modern windows
- ◆ select at least **three** joint types for specific use in modern windows
- ◆ specify at least **three** methods of joint retention in modern window manufacture
- ◆ specify at least **three** types of sustainable timber for use in different situations

The evidence must be gathered under closed-book, supervised conditions.

#### Assessment Guidelines

The assessment of this Outcome could be completed by using a combination of matching exercises for components and joint types and, restricted response questions for joint retention and use of timber. Candidates could be presented with a selection of components and joint types, written or drawn, and asked to match these to different window types or certain parts of different window types. Restricted response questions could be constructed to test the understanding and application of knowledge, with regard to the particular use of joint retention methods and the choice of timber species for differing situations.

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

**Unit title:** Carpentry and Joinery: Windows and Screens

### Outcome 2

Manufacture and hang a timber window sash to a given specification

#### Knowledge and/or Skills

- ◆ Window types
- ◆ Interpretation of drawings and specifications
- ◆ Workshop rods
- ◆ Woodworking machinery set up and use
- ◆ Window manufacture
- ◆ Modern ironmongery
- ◆ Current Health and Safety requirements
- ◆ Sustainability considerations

#### Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can, from a given specification and detailed drawings:

- ◆ produce a full size height and width workshop rod, including all components and their jointing details, for an opening sash with crossed astragals and a segmental curve on the inner edge of the top rail
- ◆ set up and use a range of appropriate woodworking machinery and woodworking power tools to manufacture the sash
- ◆ hang the sash on a window frame using modern ironmongery appropriate to the window type
- ◆ working in line with current and relevant health and safety legislation and regulations.

#### Summary of standards

|      |   |
|------|---|
| Rod  | Height within 1mm<br>Width within 1mm<br>Components positioned within 1mm   |
| Sash | Overall Height within 2mm<br>Overall Width within 2mm<br>Joints: 70% no gaps, 30% no gaps exceeding 1mm<br>Out of Wind, max 4mm<br>Square within 2mm<br>Clean hand dressed finish<br>Ironmongery correctly fitted as per Specification<br>Hung with required clearance<br>No binding and working freely |

The evidence must be gathered under supervised conditions in a fully equipped workshop. An assessor observation checklist should be completed to ensure that the candidate has met the required specification and tolerances and this observation checklist should be retained as evidence.

## **Higher National Unit specification: statement of standards (cont)**

**Unit title:** Carpentry and Joinery: Windows and Screens

### **Assessment Guidelines**

This assessment is based solely on a range of practical activities, where each stage of the work will be marked against an agreed exemplar and/or a detailed observation checklist. The window type, and hanging, will be at the discretion of the centre.

### **Outcome 3**

Research, design and cost a timber screen

#### **Knowledge and/or Skills**

- ◆ Research skills
- ◆ Timber and glass screen design
- ◆ Sequence of practical operations
- ◆ Materials lists
- ◆ Materials costing calculations
- ◆ Production of scale drawings
- ◆ Drawing elevations and sections
- ◆ Sustainability considerations

#### **Evidence Requirements**

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

- ◆ research and design a screen that contains glass panels for a designated opening
- ◆ produce a sequence of operations for the manufacture of the screen
- ◆ produce a detailed timber and glass materials list
- ◆ calculate the total cost of timber and glass required
- ◆ produce scale drawings showing a front elevation and a cross section of each component

The evidence must be gathered under open-book, supervised conditions.

#### **Assessment Guidelines**

Assessment should be by assignment, where candidates are encouraged to research various screen designs. The screen design, sequence of operations, materials list and costing calculations could be completed using appropriate computer applications and presented for marking. Scale drawings should be completed on drawing paper including a margin and containing a namebox of suitable size and type.

## Administrative Information

|                                      |  |
|--------------------------------------|--|
| <b>Unit code:</b>                    | F8P2 34                                    |
| <b>Unit title:</b>                   | Carpentry and Joinery: Windows and Screens |
| <b>Superclass category:</b>          | TG   |
| <b>Original date of publication:</b> | August 2010                                |
| <b>Version:</b>                      | 01   |

### History of changes:

| Version | Description of change | Date |
|---------|-----------------------|------|
|         |                       |      |
|         |                       |      |
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## Higher National Unit specification: support notes

### Unit title: Carpentry and Joinery: Windows and Screens

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 40 hours.

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

This Unit has been developed as an optional Unit in the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7.

The Unit is intended to equip candidates with all necessary underpinning knowledge and skills related to designing, manufacturing, jointing, and assembly of complex windows and screens.

The Unit is mainly practical and tutors may consider covering the following subjects in appropriate depth:

- ◆ window types and their uses
- ◆ direction of opening for sashes
- ◆ component shapes and sizes
- ◆ capillary attraction
- ◆ species of timber and its availability, suitability, durability and appropriate moisture content
- ◆ the possible use of various joints including through mortice and tenon, haunched mortice and tenon, stub mortice and tenon, comb joints and halving joints
- ◆ proportions of joints to retain single and double glazing units
- ◆ glass types, uses and retention methods
- ◆ clamping techniques and joint retention
- ◆ types of adhesives and their uses
- ◆ the types, purpose and accuracy of workshop rods
- ◆ various types of woodworking machinery and their principal purpose
- ◆ various types of woodworking power tools and their principal purpose
- ◆ Current legislation, including HSW Act, COSHH and PUWER regulations
- ◆ sequencing machining operations
- ◆ sequencing manufacturing operations
- ◆ the use of templates, jigs and accessories
- ◆ minimising material waste
- ◆ ironmongery and draft proofing
- ◆ screen types and their purpose
- ◆ scale drawings and the purposes of different types of projection
- ◆ material and cutting lists
- ◆ material costing methods
- ◆ appropriate use of computer applications, such as word processing and spreadsheets

## **Higher National Unit specification: support notes (cont)**

### **Unit title:** Carpentry and Joinery: Windows and Screens

Health and Safety and Sustainability are integral and key to the construction industry therefore throughout the Unit emphasis will be placed where appropriate on the application of Health and Safety and Sustainability. Safe working practices should be looked at in accordance with current safety codes of practice and regulations. Sustainability should include reference to criteria affecting sustainability, impact of not implementing sustainability on the environment and the legislation promoting sustainability. Emphasis should be placed on appropriate areas such as waste management and effective sourcing and use of materials.

Where feasible, centres should also incorporate modern methods of window construction used in industry. Candidates should be made aware of current industry practices and emerging practices and, where appropriate, technology which may become conventional in the future.

### **Guidance on the delivery and assessment of this Unit**

As part of the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7, this Unit may be delivered in a sequence suitable to individual candidates and centres. When completing this Unit as part of the PDA it is recommended that, where possible, opportunity is taken to integrate aspects of Constructional Technical Communication Skills (DW4D 34).

Assessment of Outcome 1 shall be closed-book and may include a combination of matching exercises and restricted response questions. These should be carried out under normal exam conditions.

Outcome 2 is solely practical and should be completed in a fully equipped machineworkshop/workshop where the health and safety and general wellbeing of the candidates is paramount during all activities.

Outcome 3 could take the form of an open-book assignment where candidates are given the task of designing (at their own discretion) a suitable timber and glass screen for a given internal or external opening or situation. They should produce fully annotated drawings of suitable scale(s) to show a front elevation, as well as a cross section of each component. Candidates may find it helpful to use basic computer applications to assist in compiling evidence for the assignment. For example: a single line diagram of the screen, along with a detailed sequence of operations for its manufacture, could be outlined on a word processing package; and the materials list and the costings required could be produced on spreadsheets, where a basic knowledge of appropriate formulae would be beneficial.

If feasible, site visits or information about modern and potential future methods of window construction would be beneficial. This approach could be used to enhance the candidate's experience and understanding of how their skills and knowledge might be applied in real industry situations.

Centres may use the instruments of assessment which they consider to be the most appropriate but are advised to use the Carpentry and Joinery Training and Assessment (TAP) at SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.



## Higher National Unit specification: support notes (cont)

**Unit title:** Carpentry and Joinery: Windows and Screens

### *Opportunities for developing Core Skills*

There are opportunities to develop the Core Skill of *Communication* at SCQF level 5 through candidate centred learning packs for use in the teaching and learning of Outcomes 1, 2 and 3 along with formative assessment. Opportunities will also arise in Outcome 2 where candidates will interpret specifications, workshop drawings and the workshop rod (effectively communicating component sizes and joint details required for product manufacture), as well as Outcome 3 where candidates will have to produce a detailed sequence of operations for the manufacture of a screen.

There are opportunities to develop the Core Skill of *Information and Communication Technology* at SCQF level 5 in Outcome 3 through internet research and the use of word processing and spreadsheet packages to design and collate materials and costing information. Development of skills in *Numeracy* at SCQF level 5 and also *Problem Solving* at SCQF level 5 would both be possible within these activities.

*Numeracy* and *Problem Solving*, both at SCQF level 5, could also be developed in Outcome 2 where candidates will use measurement and sequencing operations in the manufacture of the window sash.

Candidates will have opportunities to develop the Core Skill of *Working with Others* at SCQF level 5, particularly in Outcome 2 during the ‘breaking out’ of material required for the manufacture of the window sash.

Each of these, in part, can be covered during the teaching and learning process and in various Outcomes, as outlined in the grid below.

| <u>Core Skill</u>                        | <u>SCQF Level</u> | <u>O.1.</u> | <u>O.2.</u> | <u>O.3.</u> |
|--|-------------------|-------------|-------------|-------------|
| Communications                           | 5                 | ✓           | ✓           | ✓           |
| Information and Communication Technology | 5                 |             |             | ✓           |
| Numeracy                                 | 5                 |             | ✓           | ✓           |
| Problem Solving                          | 5                 | ✓           | ✓           | ✓           |
| Working With Others                      | 5                 |             | ✓           |             |

### **Open learning**

Although this Unit could be delivered in part by distance learning, it would require considerable planning by the centre to ensure the sufficiency and authenticity of candidate evidence. Arrangements would have to be made to ensure that:

- ◆ candidates have access to a suitable workshop with suitable equipment and tools
- ◆ health and safety considerations are fully taken into account
- ◆ the practical activities are supervised by a responsible person and clearly recorded (using an assessment checklist for the assessor)
- ◆ the assessor is, at some point, able to question the candidate on that performance
- ◆ assessment is carried out under the stated conditions

## **Higher National Unit specification: support notes (cont)**

**Unit title:** Carpentry and Joinery: Windows and Screens

For information on open learning arrangements, please refer to the SQA guide *Assessment and Quality Assurance of Open and Distance Learning* ([www.sqa.org.uk](http://www.sqa.org.uk))

### **Disabled candidates and/or those with additional support needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. 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: Carpentry and Joinery: Windows and Screens

This Unit has been designed to further your career in the construction industry by developing your competence and improving your knowledge of window and screen manufacture. It has been written as part of the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7 and is for experienced crafts persons working as carpenters and joiners.

The Unit will allow you to gain hands on experience in window manufacture at an advanced level and will give you a further appreciation of windows and screens through technical information and scale drawings. If you have successfully completed the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 6 you will find the knowledge, understanding and skills learned to be beneficial.

On completion of this Unit you will be able to:

- ◆ Demonstrate knowledge and understanding of window and screen construction
- ◆ Manufacture and hang a timber window sash to a given specification
- ◆ Research, design and cost a timber screen

Outcome 1 will develop your knowledge and understanding of advanced window and screen manufacture. You will be assessed using a combination of matching exercises and restricted response questions. These exercises and questions will cover: component selection; specification of timber; selection of joints and joint retention.

In Outcome 2 you will be asked to carry out a practical exercise. This will include drawing a full size workshop rod before manufacturing and hanging a timber window sash. You will be assessed against how well you carry out this work to the set specification and tolerances.

In Outcome 3 you will be assessed on how well you can design a timber and glass screen; produce a sequence of operations and a materials list; cost the materials required and produce scale drawings of the final screen.

There are naturally occurring opportunities within the Unit to develop parts of the five Core Skills listed. Each of these, in part, can be covered during the teaching and learning process and in various Outcomes, as outlined in the grid below.

| <u>Core Skill</u>                        | <u>Level</u> | <u>O.1.</u> | <u>O.2.</u> | <u>O.3.</u> |
|--|--------------|-------------|-------------|-------------|
| Communications                           | 5            | ✓           | ✓           | ✓           |
| Information and Communication Technology | 5            |             |             | ✓           |
| Numeracy                                 | 5            |             | ✓           | ✓           |
| Problem Solving                          | 5            | ✓           | ✓           | ✓           |
| Working With Others                      | 5            |             | ✓           |             |

There is no automatic certification of Core Skills or Core Skills components.

If you successfully complete this Unit and the full PDA at SCQF level 7, you will not only have advanced your craft skills, but will also automatically receive some credit for your achievement of the PDA if you progress on to the HNC Construction.