



Higher National Unit specification

General information for centres

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

Unit code: F8P5 34

Unit purpose: This Unit is designed to enable candidates to develop their knowledge and understanding of the construction requirements for complex timber stair construction. The Unit will give practical skills and competence in the setting out and construction of a built up block and riser and a quarter turn winder stair with tapered treads and a balustrade. The candidate will develop knowledge of how to recognise and apply all current legislation and health and safety regulations associated with the construction of complex stairs.

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

- 1 Demonstrate knowledge and understanding of the construction requirements for complex stairs
- 2 Set out and manufacture a built up block and riser
- 3 Set out and manufacture a quarter turn winder stair

Credit points and level: 1.5 HN credits at SCQF level 7: (12 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* and *Communication* at SCQF level 5, *Information and Communication Technology* and *Numeracy* at SCQF level 4 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:

This Unit is assessed on the candidate's knowledge and actual performance of complex stairs construction. The Unit will be achieved when the candidate presents sufficient evidence of the Knowledge and/or Skills and Evidence Requirements as specified for each of the Outcomes.

It would be possible to combine assessment of Outcomes 2 and 3, or to break this assessment down into separate assessment events that assess each Outcome separately. 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

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

Outcome 1

Demonstrate knowledge and understanding of the construction requirements for complex stairs

Knowledge and/or Skills

- ◆ Complex stairs terminology
- ◆ CAD or manual drawing
- ◆ Stair types
- ◆ Geometric string staircases
- ◆ Laminated spine beam staircases
- ◆ Health and Safety and timber stair regulations and legislation
- ◆ Timber stair manufacturing processes
- ◆ Sustainability considerations

Evidence Requirements

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

- ◆ define a minimum of **four** complex stairs terminology
- ◆ apply current regulations relating to design and installation of complex timber stair construction to a given scenario
- ◆ produce a minimum of **four** annotated drawings to support accurate illustration of complex timber stair types
- ◆ accurately describe the manufacturing processes of a geometric string staircase
- ◆ accurately describe the manufacturing processes of a laminated spine beam staircase
- ◆ accurately describe the installation and site fixing of a laminated spine beam staircase

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

Assessment Guidelines

The assessment could be in the form of an exercise where the candidate will define four items of related terminology, illustrate four associated stair regulations, describe two manufacturing processes and describe the laminated spine beam staircase installation and site fixing process. Drawings could be done manually or with CAD.

Higher National Unit specification: statement of standards (cont)

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

Outcome 2

Set out and manufacture a built up block and riser

Knowledge and/or Skills

- ◆ Interpretation of specifications
- ◆ Built up block workshop drawing
- ◆ Workshop rod production
- ◆ Laminated and saw kerfed riser details
- ◆ Veneered riser and folding wedges
- ◆ Laminated block details
- ◆ Woodworking machines
- ◆ Built up block and riser manufacture
- ◆ Fitting and retaining riser to built up block
- ◆ Built up steps manufacture
- ◆ Staircase fitting
- ◆ Staircase fixing
- ◆ Current Health and Safety legislation
- ◆ Modern timber stairs manufacture methods
- ◆ Sustainability considerations

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can accurately manufacture, fit and securely fix a built up block and riser. Candidates must interpret a workshop drawing and specification to produce a rod and manufacture a built up block and riser, having a minimum height of 75mm, in a safe and organised manner.

Summary of standards

Plan of block to size — within 2mm
Height of block to size — within 2mm
Riser to correct size — within 1mm
Riser secured to block — no movement

The candidate must achieve at least three of the standards above. The evidence must be gathered under supervised conditions. 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.

Assessment Guidelines

Candidates will individually produce an accurate workshop rod and work in pairs to manufacture, fit and fix a built up block and riser in accordance with the specification and tolerances required for this Outcome. Candidates should be provided with drawings and specifications for the practical task and assessment should be carried out in a suitable workshop environment. This could be combined with assessment of Outcome 3.

Higher National Unit specification: statement of standards (cont)

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

Outcome 3

Set out and manufacture a quarter turn winder stair.

Knowledge and/or Skills

- ◆ Site measurements
- ◆ Storey rods
- ◆ Building regulations
- ◆ Stair formula and calculations
- ◆ Interpretation of stair workshop drawings and specification
- ◆ Workshop rod drawing
- ◆ Riser and tread construction joints
- ◆ Stringer and newel construction joints
- ◆ Balustrade construction joints
- ◆ Pitch boards and templates
- ◆ Router jigs
- ◆ Stringer and newel post development
- ◆ Sequencing of work activities
- ◆ Setting up and operating woodworking machinery and power tools.
- ◆ Minimising wastage of material.
- ◆ Current Health and Safety legislation

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can as one of a pair, manufacture a quarter turn winder stair with a balustrade that has at least three straight steps and three tapered steps forming the quarter turn with, a minimum step rise of 150mm, a minimum width of 450mm over the stringers and a maximum pitch of 42°. All working practices must be in line with current and relevant health and safety legislation and regulations.

Summary of standards

Over all height of stair — within 6mm
Over all width across stringers — within 5mm
Wall stringers — aesthetically correct
Handrail parallel to stringer — within 6mm
Balusters equally spaced — within 3mm
Joints fitting and secured — 75%
All surfaces — free from marks

The evidence must be gathered under controlled, supervised conditions. 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.

ASSESSMENT GUIDELINES

The candidate will as one of a pair provide sufficient practical performance evidence necessary to set out and manufacture the stairs in accordance with the Evidence Requirements. Candidates should be provided with drawings and specifications for the practical task and assessment should be carried out in a suitable workshop environment. This could be combined with Outcome 2.

Administrative Information

Unit code:	F8P5 34
Unit title:	Carpentry and Joinery: Complex Timber Stair Construction
Superclass category:	TG
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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

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 60 hours.

Guidance on the content and context for this Unit

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

This Unit is intended to equip candidates with all necessary underpinning knowledge and skills related to designing, manufacturing, jointing, assembling and installing complex timber stairs.

In Outcome 1, using previously gained competences, the candidate should be guided to the technical and constructional aspects associated with balustrades, built up step manufacture, tapered steps, geometric string and spine beam manufacture and installation, and current building regulations. Stair types should include: dogleg, open-well, 1/4 turn, 1/2 turn, geometric, and open stairs with laminated spine beams. Visual aids, exemplars and photographs could be used to enhance the learning process.

In Outcome 2 candidates should be introduced to traditional and modern forms of built up steps and be guided on practical methods of their manufacture.

In Outcome 3 it should be stressed to the candidates how important it is to accurately produce a workshop rod and work from it. Candidate's previous knowledge of straight flight stairs should be further developed for production of shaped stringers and tapered treads. Development by numbering the faces of newel posts should be explained and exercised.

The stair may be manufactured having one straight step above and two below the quarter turn or two straight steps above and one below the quarter turn. Exemplar drawings and or visual aids could be used to enhance the learning process.

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 construction used in industry. Candidates should be made aware of current industry practice and emerging practice or technology which may become conventional in the future.

Higher National Unit specification: support notes (cont)

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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).

This Unit could be delivered through a series of lectures and formative theory and practical examples which will involve the candidate carrying out the activities outlined in the Outcomes. Candidates should be encouraged to use visual evidence from the internet, textbooks and notes which illustrate the design, manufacture and installation requirements of complex timber stairs.

Outcome 1 could be delivered with the candidates working individually to generate the relevant evidence.

In Outcome 2 and 3 candidates will be required to work in pairs, to generate practical evidence in stair construction complemented by the lecturer's guidance and instruction in the production of jigs, templates, and safety procedures. A project brief, outlining the work to be undertaken for each Outcome, could be used to cover the Performance Criteria.

If feasible, site visits or information about modern and potential future methods of 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.

Opportunities for developing Core Skills

There are opportunities to develop the Core Skill of *Problem Solving* at SCQF level 5. Candidates will need to take account of a range of factors in order to work efficiently and safely, such as the choice of tools, appropriate materials, safety issues, safety equipment and sustainability. Individual discussions with assessors and the use of role play will enhance the evaluation of efficient working practices.

There are opportunities to develop the Core Skill of *Working with Others* at SCQF level 5, particularly during practical assessments which should be carried out in pairs. Candidates can agree responsibilities and provide support and information to each other during the practical group activities.

There are opportunities to develop the Core Skill of *Communication* at SCQF level 5 throughout this Unit by the candidates describing various aspects of complex timber stair construction. Candidates will interpret specifications, workshop drawings and the workshop rod, effectively communicating component sizes and joint details required for product manufacture. As candidates complete practical tasks, they should be expected to communicate with others using the correct terminology, tone and style suited to the workplace.

Higher National Unit specification: support notes (cont)

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

There are opportunities to develop the Core Skill of *Information and Communication Technology* at SCQF level 4 in Outcome 1 where the candidates will be encouraged to access information through internet research. They could also be encouraged to word process responses for formative assessments and could use digital images as part of their evidence.

There are opportunities to develop the Core Skill of *Numeracy* at SCQF level 4 through the interpretation of information from 3 dimensional working drawings and the practical use of calculation and measuring scales.

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

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)

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

General information for candidates

Unit title: Carpentry and Joinery: Complex Timber Stair Construction

This Unit has been designed to further your career in the construction industry by developing your competence and improving your knowledge of complex timber stairs construction. 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 in the construction industry as carpenters and joiners.

The Unit will help develop your underpinning knowledge and skills related to designing, jointing, assembling and installing more complex timber stairs which incorporate turns.

You will be assessed on your knowledge of complex timber stairs with tapered steps and a balustrade and their construction, installation and associated regulations. You will learn about current building regulations and health and safety legislation associated with this type of stair construction.

You will also have to set out and manufacture a quarter turn winder stair and will be observed to see how well you meet the set specification and tolerances.

There are opportunities within the Unit to develop your Core Skills *Problem Solving* and *Working with Others* and *Communication* at SCQF level 5, *Information and Communication Technology* and *Numeracy* at SCQF level 4 in this Unit, although 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.