



National Unit Specification: general information

UNIT Woodmachining: Jig Development and Manufacture
(SCQF level 6)

CODE F7GF 12

SUMMARY

This Unit is suitable for candidates working towards a Modern Apprenticeship in Woodmachining and will develop the candidate's skills in the manufacture of templates and jigs to manufacture components to pre determined dimensions, safely and accurately. This Unit is also designed to enable candidates to develop their knowledge and understanding of jig manufacture and use, the technical terminology relating to the safe use of jigs and holding devices within a wide range of machinery.

OUTCOMES

- 1 Demonstrate knowledge and understanding relating to the materials and devices used in the safe and accurate manufacture of jigs.
- 2 Design and manufacture a range of jigs for various machines and operations.
- 3 Use jigs safely for a range of operations.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates undertaking the Professional Development Award in Woodmachining at SCQF level 6 must meet the requirements of the Modern Apprentices which include being employed in a relevant craft industry. It is recommended that candidates are introduced to *Woodmachining: Breaking out Machines (Circular Saws)*; *Woodmachining: Planing Machines* and *Woodmachining: High Speed Router* at SCQF level 6 before attempting the practical aspects of this Unit.

CREDIT VALUE

1 credit at SCQF level 6 (6 SCQF credit points at SCQF level 6*).

**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.*

Administrative Information

Superclass: TG

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CORE SKILLS

While there is no automatic certification of Core Skills or Core Skill components in this Unit, opportunities for developing aspects of the following Core Skills are highlighted in Support Notes of this Unit:

- ◆ *Problem Solving* at SCQF level 4
- ◆ *Numeracy* at SCQF level 4
- ◆ *Information and Communication Technology* at SCQF level 3
- ◆ *Communication* at SCQF level 4

National 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

Demonstrate knowledge and understanding relating to the materials and devices used in the safe and accurate manufacture of jigs.

Performance Criteria

- (a) Correctly define terminology relating to the design, manufacture and use of jigs.
- (b) Correctly identify materials used to make jigs.
- (c) Correctly identify hand tools used to make jigs.
- (d) Correctly describe the reasons for using jigs.
- (e) Correctly identify methods of securing workpieces to jigs.

OUTCOME 2

Design and manufacture a range of jigs for various machines and operations.

Performance Criteria

- (a) Design suitable jigs for a range of specific tasks and machinery.
- (b) Correctly select materials and equipment to make jigs.
- (c) Manufacture jigs using appropriate machinery and hand tools.
- (d) Comply with current health and safety regulations in all work methods and throughout all practical activities.

OUTCOME 3

Use jigs safely for a range of given operations.

Performance Criteria

- (a) Accurately locate the component to the jig.
- (b) Safely secure the component to the jig.
- (c) Correctly use jigs for a range of operations.
- (d) Comply with current health and safety regulations in all work methods and throughout all practical activities.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that the candidates have achieved this Unit to the standard specified within all Outcomes and Performance Criteria. All working practices must be in line with relevant and current Health and Safety legislation and regulations. A risk assessment and method statement must be completed prior to any practical activities taking place.

Written and/or oral evidence is required for Outcome 1 which demonstrates the candidates' knowledge and understanding of technical terminology relating to the practical applications of woodworking machinery and equipment utilised in the design and use of jigs for specific purposes. Evidence is also required to show the candidate can identify various component holding/clamping devices and can relate manufacturing processes including the correct sequencing of operations and safe working practices. Evidence for this Outcome will be obtained by a series of multiple choice question papers under closed-book supervised conditions.

Performance evidence is needed for Outcomes 2 and 3 to show the candidate can meet all Performance Criteria by correctly constructing jigs to manufacture a minimum of **six** accurately produced components using a range of machinery. All working practices must be in line with current and relevant health and safety legislation and regulations.

National Unit Specification: support notes

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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 a mandatory Unit in the PDA in Woodmachining at SCQF level 6 which is a mandatory component of the Modern Apprenticeship. The content and context of this Unit is aimed at candidates who are pursuing a career in the craft of Woodmachining.

The successful completion of this Unit will provide candidates with the required underpinning knowledge of the design and use of jigs for specific operations and manufacturing processes using a wide range of machinery and working to given specifications, safe working practices and current health and safety legislation.

This Unit would be offered to candidates from the construction and related industries. The skills are transferable within different working environments but the Unit is primarily aimed at candidates whose normal place of work would be a site, workshop, or similar environment.

The Unit deals with the theory and practice associated with the safe use of jigs and holding devices and is complemented by Units dealing with related work in machine woodworking. Candidates should be working towards *Woodmachining: Breaking out Machines (Circular Saws)*; *Woodmachining: Planing Machines* and *Woodmachining: High Speed Router* at SCQF level 6 before attempting practical aspects of this Unit. This Unit should be delivered as part of a structured programme of training and orientated to the context of the candidate's work and area of responsibility.

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. Safety 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.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Candidates should be given working drawings and specifications. It is recommended that candidates work towards tolerances of ± 0.5 mm for component dimensions and ± 2 mm for complete manufactured work pieces.

National Unit Specification: support notes (cont)

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Opportunities should be taken throughout delivery of this Unit to meet the requirements of the generic Units of the Training and Assessment Programme including:

- ◆ Conform to Efficient Working Practices
- ◆ Conform to General Workplace Safety
- ◆ Move and Handle Resources
- ◆ Confirm Work Activities and Resources for the Work
- ◆ Develop and Maintain Good Working Relationships
- ◆ Confirm the Occupational Method of Work

The candidate should be introduced to all relevant machinery components, tooling and ancillary equipment through classroom teaching with the use of visual aids, electronic presentations, DVDs, e-learning, reference books, classroom exercises and group discussions. The function of each component should be thoroughly demonstrated. Safe working practice methods should be demonstrated by candidates showing good technique in the measuring, marking out of materials, setting and safe operation of machinery. This teaching approach should help ensure the candidate is acquiring the underpinning knowledge required for the Unit.

Outcome 1

The candidate should be introduced to the terminology related to the functions of jigs and their uses with various machines. The candidate should be made fully aware of the exacting demands required to reproduce components of high quality, this includes exploring various types of holding/clamping devices used with jigs. Correct terminology should be used throughout with safe practices being clearly emphasised when investigating the functions of jigs and holding devices.

Outcome 2

The candidate should become competent to design a range of jigs using appropriate materials and holding devices to manufacture given components, using various machinery and hand tools. The jigs should be accurate and hold components securely and safely.

Outcome 3

The candidate should become competent at setting up and performing operations on a range of machinery using jigs and holding devices. It is imperative that safe working practices on the machine are clearly emphasised. The candidate should be provided with appropriate material, a workshop drawing(s) and specification for each component outlining demands of the practical exercise and Performance Criteria.

At the time of writing the following safety requirements apply: HSW (Health and Safety at Work etc.) Act; COSHH (Control of Substances Hazardous to Health) Regulations; PUWER (Provision and Use of Work Equipment Regulations).

National Unit Specification: support notes (cont)

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OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

The Core Skill of *Problem Solving* at SCQF level 4 could be developed through the choice of tooling, appropriate materials, safety issues, safety equipment and sustainability.

Numeracy skills at SCQF level 4 could be developed through the interpretation of information from 3 dimensional working drawings and workshop calculations within Outcome 2.

The Core Skill of *Information and Communication Technology* at SCQF level 3 could be developed by use of spread sheets for risk assessment, e-learning and e-assessment.

Candidates will have the opportunity to develop the Core Skill of *Communication* at SCQF level 4 throughout practical tasks, as they should be expected to communicate with others using the appropriate terminology, tone and style suited to the workplace.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

The Woodmachining Training and Assessment Programme (TAP) sections 1, 2, 3 and 5 provide detailed assessment material for this Unit. It is advised to use the TAP which has been developed centrally by SQA. Any other instrument of assessment used must be comparable to the TAP and have been through prior verification. It is expected that candidates will be given as much practise as possible, prior to being set the assessment tests.

A suitable method of assessing the candidates' knowledge and understanding of jig terminology, manufacture and safe use would be through a series of multiple choice and written question papers conducted under controlled, supervised conditions.

Evidence will be gathered for Outcomes 2 and 3 through observation that the candidates have met the given standards and tolerances during practical activity. An assessor observation checklist can be used to record this evidence. Assessment should be conducted under controlled, supervised conditions, suitable tasks to show candidate competency would be the manufacture of a trefoil or work holder.

Opportunities for the use of 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 e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

National Unit Specification: support notes (cont)

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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