



Higher National Unit specification

General information for centres

Unit title: Woodmachining: Planing, Moulding and Sanding

Unit code: F8RE 34

Unit purpose: This Unit is designed to enable candidates to develop their knowledge, understanding and skill in the set up and use of a specialist range of Planing, Moulding and Sanding Machines using advanced techniques and identification of cutting agents used in the manufacture of planed, moulded and sanded components which will be used for a range of purposes. This Unit will also enable candidates to use these machines to their full production potential and also calculate costs of the produced components.

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

- 1 Demonstrate knowledge and understanding of specialist planing, moulding and sanding machines and their functions.
- 2 Safely set up a range of planing and moulding machines for production.
- 3 Accurately machine and cost components.
- 4 Correctly and safely set up and use a range of sanding machines and equipment.

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 Woodmachining at SCQF level 6 (G9FH 46) or have the equivalent level of industrial experience and prior learning.

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

Context for delivery: This Unit forms part of the Professional Development Award in Woodmachining at SCQF level 7 and is aimed at candidates following a career in Machine Woodworking and receiving complementary industrial experience. It is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes

General information for centres (cont)

Unit title: Woodmachining: Planing, Moulding and Sanding

Assessment: This Unit is assessed on the candidates' actual performance of safely selecting and setting up planing, moulding and sanding machinery and tooling for appropriate production methods. The candidates will also have to show knowledge and understanding in the theory of cutter development, costing of components including machine time and knowledge of full current regulations in regards to the specialist machine.

Evidence will be gathered through observation of work processes and assessment of the completed work. Assessment should be carried out under controlled, supervised conditions. In order to achieve this Unit, candidates are required to present sufficient evidence that they have met all the Knowledge and/or Skills elements for each Outcome. Details of these requirements are given for each Outcome.

The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Woodmachining 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 will be made available for external verification.

Higher National Unit specification: statement of standards

Unit title: Woodmachining: Planing, Moulding and Sanding

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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 specialist planing, moulding and sanding machines and their functions

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Knowledge and/or Skills

- ◆ Push feed four sided moulder
- ◆ Through feed four sided moulder
- ◆ Surface planer
- ◆ Panel planer
- ◆ Wide belt sander
- ◆ Bobbin sander
- ◆ Disc sander
- ◆ Various accessories
- ◆ Various cutter blocks
- ◆ Various sanding materials
- ◆ Various feed arrangements

Evidence Requirements

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

- ◆ produce drawings/sketches illustrating main design features of **four** specialist planing, moulding and sanding machines stating their functions correctly
- ◆ describe the purpose of their accessories and feed arrangements
- ◆ produce drawings accurately detailing cutter development

Centres can select four machines from the knowledge and skills list of assessment. Evidence will be gathered under closed-book and supervised conditions.

Assessment Guidelines

The candidate could provide oral and/or written evidence using correct technical terminology to identify and describe machine parts, accessories and feed arrangements.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Planing, Moulding and Sanding

Outcome 2

Safely set up a range of planing and moulding machines for production

Knowledge and/or Skills

- ◆ Setting up of blocks
- ◆ Setting up of machine
- ◆ Setting of feed and appropriate feed speeds
- ◆ Guards and accessories
- ◆ Planning
- ◆ Wastage
- ◆ 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:

- ◆ in accordance with current safety legislation safely set up a range of planing and moulding machines
- ◆ correctly select the appropriate cutting agents for specific work
- ◆ correctly select the correct feed speed in accordance with finish required
- ◆ correctly set all guards and accessories

Evidence will be gathered with aid of practical checklist and under supervised conditions.

Assessment Guidelines

The candidate will be assessed on actual performance of setting up for various projects to show knowledge and understanding of factors affecting the setting up of cutters, cutter blocks, feed speeds and the correct use and position of all guards. Evidence could also be in the form of a small written report on the setting up process and responsibilities regarding statutory legislation.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Planing, Moulding and Sanding

Outcome 3

Accurately machine and cost components

Knowledge and/or Skills

- ◆ Feed mechanisms, guards and accessories.
- ◆ Feed speed selection to accommodate surface finish
- ◆ Types of feed — through and push.
- ◆ Safety requirements during setting up process.
- ◆ Tooling selection, cutter shape and location
- ◆ Materials — Softwood and hardwood
- ◆ Wastage
- ◆ 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:

- ◆ explain the importance of surface finish on material and calculate machining and material costs
- ◆ correctly run materials with all guards in position
- ◆ correctly cost components
- ◆ correctly describe current safety requirements during the setting up process
- ◆ correctly describe statutory legislation regarding roles and responsibilities with the use and setting up of moulding machines

Evidence for practical activities 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.

Evidence for feed speeds and costing activities must be gathered under open-book, supervised conditions. Price lists for tooling and materials will be made available during assessment.

Assessment Guidelines

The candidate will be assessed on the set up and safe running of the machine. Evidence should be recorded using observation checklists and recorded candidate feedback to ensure that the candidate has met the required standard for this Outcome. Candidates would also be assessed on the machining time and costing of a specified amount of material. This would normally take place in the workshop environment during practical activities.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Planing, Moulding and Sanding

Outcome 4

Correctly and safely set up and use a range of sanding machines and equipment

Knowledge and/or Skills

- ◆ Machine set up and operation
- ◆ Table calibration
- ◆ Floating table
- ◆ Dust extraction
- ◆ Production of sanded components
- ◆ Feed mechanisms, drive methods, guards and accessories
- ◆ Types of abrasive
- ◆ 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:

- ◆ correctly set up and operate various sanding machinery
- ◆ produce sanded components to specific dimensions
- ◆ correctly utilise feed mechanisms, guards and accessories for various operations
- ◆ correctly select the appropriate grits and bond and sand timber frames and manufactured boards of various densities

Evidence for practical activities 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 be assessed on actual performance of setting up sanding machines accurately using appropriate sand paper with appropriate grit and bond, tooling, guarding and feed mechanisms for specific operations. Evidence should be recorded using observation checklists and recorded candidate feedback to ensure that the candidate has met the required standard for this Outcome.

Administrative Information

Unit code:	F8RE 34
Unit title:	Woodmachining: Planing, Moulding and Sanding
Superclass category:	WK
Original date of publication:	August 2010
Version:	01

History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Woodmachining: Planing, Moulding and Sanding

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 7. The content and context of this Unit is aimed at candidates who are pursuing a career in the craft of Machine Woodworking.

This Unit has been designed to enable the candidate to develop their knowledge and understanding to enable them to use a range of specialised planing, moulding and sanding machines using advanced techniques. In addition the candidate will be able to identify the importance of surface finish and estimate machine and material costs. The successful completion of this Unit will enable the candidate to safely set up and operate specialist moulding, planing and sanding machines after outlining design details of a range of machines.

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.

Where feasible, centres should also incorporate modern machining methods, tooling, equipment and materials used within the Machine Woodworking industry. Candidates should be made aware of current industry practice and emerging practice or 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 Woodmachining 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).

Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Woodmachining 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: Woodmachining: Planing, Moulding and Sanding

Where this Unit is incorporated into other Group Awards it is recommended that it be delivered in the context of the specific occupational area that the award is designed to cover. Details on approaches to assessment are given under Evidence Requirements and Assessment Guidelines under each Outcome in the Higher National Unit specification statement of standards section. It is essential that these sections be read carefully before proceeding with assessment of candidates.

The candidate should be introduced to all relevant machinery components, tooling and ancillary equipment, feed mechanisms, feed speed calculations and the theory of the selection of sand paper grits and bonds through classroom teaching with the use of visual aids, electronic presentations, DVD's, 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 setting and safe operation of machinery. This teaching approach should help ensure the candidate is acquiring the underpinning knowledge required for the Unit.

Candidates should be given as much practise as possible costing tooling and materials prior to being set the assessments. Evidence will be gathered through observation that the candidates have met the given standards and tolerances during the production of drawings and practical assessment.

Candidates will be required to demonstrate their knowledge of terminology, techniques and practices by successful completion of knowledge questioning relating to planing, moulding and sanding machines along with correct feed speeds, surface finish and the identification of various specialist machines, their limitations and components.

Where available, evidence from the workplace can be incorporated to enhance the Outcomes, provided that this evidence is appropriate and authenticated as the candidate's own work. It is the responsibility of the centre to satisfy themselves that the portfolio of evidence submitted for assessment is entirely original and solely the respective student's work.

Opportunities for developing Core Skills

The delivery and assessment of this Unit may contribute towards the Core Skill of *Communication* at SCQF 5 particularly where the requirement for assessment is in the form of a scaled drawings and knowledge questioning. As candidates complete the practical tasks in Outcome 3 and 4 they will be expected to communicate with others using correct terminology, tone and style suited to the workplace.

There are opportunities to develop the Core Skill of *Numeracy* at SCQF Level 5 within Outcomes 2 and 3 where the candidate must complete calculations relating to feed speeds and chip removal. The candidates will also be required to interpret sizes and measurements, read and produce accurate drawings and transfer information accordingly.

Higher National Unit specification: support notes (cont)

Unit title: Woodmachining: Planing, Moulding and Sanding

The Core Skill of *Working with Others* at SCQF 5 could also be developed in this Unit in the practical work where candidates may work in pairs. Working with Others involves the ability to work with others to plan, agree, and take responsibility for tasks; to support co-operative working in appropriate ways; and to review the effectiveness of one's own contribution.

The Core Skill of *Problem Solving* at SCQF level 5 could be developed through the choice of tooling, appropriate materials, safety issues, safety equipment and sustainability.

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: Woodmachining: Planing, Moulding and Sanding

This Unit has been designed to further your career in the timber industry by developing your competence and improving your knowledge of planing, moulding and sanding machines. It has been written as part of the Professional Development Award (PDA) in Woodmachining at SCQF level 7, and is for experienced crafts persons working in the timber industry as woodmachinists.

The Unit will help develop your underpinning knowledge and skills in the set up and use of a specialist range of planing, moulding and sanding machines using advanced techniques and identify cutting agents used in the manufacture of moulding equipment for a range of purposes.

You will be assessed on your knowledge of identifying specialist planing, moulding and sanding machinery and equipment, costing tooling and materials, sand paper grit and bonds, accurately reproducing cutter development drawings and sketching machines and their functions.

These assessments will take the form of open-book and closed-book and will be supervised. Price lists for tooling and materials will be made available during assessment.

You will also be assessed on the safe set up of planing, moulding and sanding machinery and the manufacture of various components to given dimensions/drawings within the practical workshop through observation.

There are opportunities to develop the Core Skills of *Communication*, *Numeracy*, *Working with Others* and *Problem Solving* all at SCQF level 5 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 if you progress on to the HNC Construction.