



Higher National Unit specification

General information for centres

Unit title: Woodmachining: Computer Aided Manufacturing (CAM)

Unit code: F8RC 34

Unit purpose: This Unit is designed to enable candidates to develop their knowledge, understanding and skill in the computing required for the compilation of details of component parts, cutting plans and cutting lists of sheet materials. This Unit will also enable candidates to input data and maintain stock records using computerised systems.

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

- 1 Demonstrate knowledge and understanding of components.
- 2 Accurately produce a computer aided cutting plan and maintain records for sheet material.
- 3 Accurately produce a computer aided cutting plan and maintain records for solid material.

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, Information and Communication Technology* 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: Computer Aided Manufacturing (CAM)

Assessment: This Unit is assessed on the candidates' actual performance that they can demonstrate knowledge and understanding of materials, fittings, dimensions, joints, and detailed dimensions of components. Evidence of actual performance is also required to show the candidate can input data, produce cutting list and plan and maintain stock records.

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

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

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.

Outcome 1

Demonstrate knowledge and understanding of components

Knowledge and/or Skills

- ◆ Computers
- ◆ Cad and cam software
- ◆ Printers
- ◆ Timber
- ◆ M.D.F.
- ◆ Plywood
- ◆ Chipboard
- ◆ Veneered material
- ◆ Plastics
- ◆ Locks
- ◆ Hinges
- ◆ Handles
- ◆ Stays
- ◆ K.D. fittings

Evidence Requirements

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

- ◆ produce detailed dimensioned computer aided drawings of components, which include:
 - materials
 - fittings
 - dimensions
 - joints
- ◆ input data correctly to produce a comprehensive component list.

Evidence will be gathered under closed-book and supervised conditions.

Assessment Guidelines

The candidate could provide oral and/or written evidence they can produce details of materials, fittings, dimensions and joints. They must also create detailed dimensioned plot of components and a list showing materials, dimensions, quantity and surface finish.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Computer Aided Manufacturing (CAM)

Outcome 2

Accurately produce a computer aided cutting plan and maintain records for sheet material

Knowledge and/or Skills

- ◆ Computers
- ◆ Printers
- ◆ Nesting of piece parts
- ◆ Cutting lists
- ◆ M.D.F.
- ◆ Plywood
- ◆ Chipboard
- ◆ Veneered materials
- ◆ Grain
- ◆ Plastics
- ◆ Stock available, final stock, waste factor, cost.

Evidence Requirements

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

- ◆ accurately input correct data
- ◆ produce an accurate cutting list
- ◆ select appropriate materials for specific work
- ◆ plot a logical cutting plan
- ◆ maintain an accurate record of stock material

Evidence will be gathered through practical set projects and supervised, closed-book assessment.

Assessment Guidelines

The candidate should provide oral and/or written evidence to show that they can explain the economic use of materials and applications of sheet materials. Evidence of actual performance is needed to show the candidate can input data, produce a cutting list and plan, and also maintain stock records

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Computer Aided Manufacturing (CAM)

Outcome 3

Accurately produce a computer aided cutting plan and maintain records for solid material

Knowledge and/or Skills

- ◆ Computers
- ◆ Printers
- ◆ Cutting list, length, breadth, and thickness
- ◆ Grain direction
- ◆ Hardwood
- ◆ Softwood
- ◆ Stock availability
- ◆ Final stock
- ◆ Waste factors and off cut utilisation.
- ◆ Cost

Evidence Requirements

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

- ◆ correctly interpret the requirements of a components list
- ◆ accurately input correct data
- ◆ correctly produce an accurate cutting list
- ◆ maintain an accurate record of stock material

Evidence will be gathered through practical set projects and supervised, closed-book assessment.

Assessment Guidelines

The candidate should provide oral and/or written evidence to show that they can explain the economic use of materials, input of data and a logical sequence of work. Evidence of actual performance is needed to show the candidate can input data, produce a cutting list and plan, and also maintain stock records.

Administrative Information

Unit code: F8RC 34

Unit title: Woodmachining: Computer Aided Manufacturing (CAM)

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: Computer Aided Manufacturing (CAM)

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, enabling them to use sophisticated software to implement the pre production planning essential to economic production by producing component lists, cutting lists, cutting plans, costs and stock control information.

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)

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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 a suitable software package when delivering this Unit through classroom teaching, electronic presentations, DVD's, e-learning, reference books, exercises and group discussions. This teaching approach should help ensure the candidate is acquiring the underpinning knowledge required for the Unit.

Candidates will be required to demonstrate their knowledge and understanding by compiling component details including cutting lists, cutting plans, cost and stock control information by way of a set brief detailing the specifications for a particular assembly.

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 in Outcomes 1, 2 and 3 where the requirement for assessment is in the form of knowledge questioning. As candidates complete the practical tasks 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 as the candidate will also be required to interpret sizes and measurements, read and drawings and transfer information accordingly.

The Core Skill of *Working with Others* at SCQF 5 could also be developed in this Unit. This 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 *Information and Communication Technology* at SCQF level 5 is evidenced throughout the Unit with the practical aspect of using personal computers and dedicated software.

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

Higher National Unit specification: support notes (cont)

Unit title: Woodmachining: Computer Aided Manufacturing (CAM)

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: Computer Aided Manufacturing (CAM)

This Unit has been designed to further your career in the timber industry by developing your competence and improving your knowledge of Computer Aided Manufacture and its applications. 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 you further develop your underpinning knowledge and skills to produce component details, cutting plans, cutting lists and maintain stock records for hardwood and softwoods. On completion of this Unit you should also have the computing skills required to generate stock control spread sheets and costings.

You will be assessed on your knowledge of the pre production planning essential to economic production by producing component lists, cutting lists, cutting plans, costs and stock control information using suitable software.

These assessments will take the form of supervised projects and closed-book knowledge questioning.

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