

# Draft National Unit Specification



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**Unit title:** Practical Metalworking: Machine Processes (National 4)

**SCQF:** level 4 (6 SCQF credit points)

**Unit code:** to be advised

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## Unit outline

The general aim of this Unit is to help learners build measuring and marking-out skills and to develop skills in setting up and using common metalwork machines, equipment and related processes. Learners will also develop an appreciation of safe working practices in a workshop environment.

Learners who complete this Unit will be able to:

- 1 Prepare for metalwork machine process tasks
- 2 Use a range of marking-out tools, machine tools and equipment
- 3 Manufacture an artefact from working drawings

This Unit is a mandatory Unit of the Practical Metalworking (National 4) Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes*, which provides advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in the *National Assessment Resource*.

The Added Value Unit Specification for the Practical Metalworking (National 4) Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Practical Metalworking (National 4) Course.

## Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ Access 3 Design and Technology Course or relevant component Units
- ◆ Access 3 Practical Craft Skills Course or relevant component Units

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Unit. Further information on relevant experiences and outcomes will be given in the *Unit Support Notes*.

## **Equality and inclusion**

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information please refer to the *Unit Support Notes*.

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# Standards

## Outcomes and assessment standards

### Outcome 1

The learner will:

#### 1 Prepare for metalwork machine process tasks by:

- 1.1 Selecting, with guidance, metalworking tools and equipment appropriate for tasks
- 1.2 Selecting, with guidance, metalworking materials appropriate for tasks, identifying them based on their properties and uses
- 1.3 Confirming that metalworking tools and equipment are in good condition and safe working order before, during and after use
- 1.4 Using correct names and terminology when referring to common metalworking tools, equipment, materials and processes
- 1.5 Working in accordance with recognised procedures and safe working practices
- 1.6 Describing good practice in terms of sustainability for practical metalworking tasks

### Outcome 2

The learner will:

#### 1 Use a range of marking out tools, machine tools and equipment by:

- 1.1 Correctly locating datums with guidance
- 1.2 Marking out, with guidance, components or workpieces in accordance with working drawings and with three functional sizes within tolerances of +/- 1 mm on two linear sizes
- 1.2 Selecting, with guidance, the correct tools for the work being carried out
- 1.3 Performing, with guidance, drilling and countersinking operations on a pedestal drill within a tolerance of +/- 1 mm
- 1.4 Performing, with guidance, parallel turning, facing and chamfering operations on a centre lathe with acceptable neatness and consistency of finish
- 1.3 Using, with guidance, tools and equipment safely and correctly

### Outcome 3

The learner will:

#### 3 Manufacture an artefact from working drawings by:

- 3.1 Checking, with guidance, materials supplied against working drawings
- 3.2 Correctly locating datum and marking out components with guidance
- 3.3 Manufacturing, with guidance, an artefact with three functional sizes within tolerances of +/- 0.5 mm on diameter and +/- 1 mm on linear
- 3.4 Using, with guidance, tools and equipment safely and in accordance with good practice
- 3.5 Working in accordance with recognised procedures and safe working practices
- 3.6 Carrying out good practice in terms of sustainability and recycling

# Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

In this Unit, Evidence Requirements are as follows:

Evidence may be presented for individual Outcomes or it may be gathered for the Unit as a whole through integrating assessment holistically in one single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

For this Unit, learners will be required to provide evidence of:

- ◆ knowledge of a range of machine tools, equipment, processes and metals
- ◆ the ability to mark out components from simple working drawings
- ◆ the ability to produce simple metalwork to a given standard
- ◆ working in accordance with given procedures and safe working practices

The tolerances given in the assessment standards for metalwork machine processes and the manufacture of artefacts are indicative of the typical standard expected for Practical Metalworking (National 4) Units. Tolerances for assemblies in this context are dependent on the size and scale of the assemblies selected. It is assumed that assemblies in this Unit are readily portable and that the tolerances given are suitable for such work and at this level. The tolerances are also given assuming that available machinery can reasonably meet these expectations.

Learners at National 4 level are expected to require a reasonable level of guidance and support throughout practical activities.

Exemplification of assessment will be provided in the *National Assessment Resource*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

# Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

## **1 Literacy**

1.3 Listening and talking

## **2 Numeracy**

2.2 Money, time and measurement

## **4 Employability, enterprise and citizenship**

4.3 Working with others

## **5 Thinking skills**

5.1 Remembering

5.2 Understanding

5.5 Creating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

## Administrative information



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**Published:** August 2011 (version 1.0)

**Superclass:** to be advised

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### History of changes

Version	Description of change	Authorised by	Date

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