

National Unit Specification: general information

UNIT Engineering Skills: Mechanical (Intermediate 1)

CODE F19C 10

COURSE Engineering Skills (Intermediate 1)

SUMMARY

This Unit is a mandatory Unit of the *Engineering Skills (Intermediate 1)* Course. The Unit is suitable for candidates with no previous engineering or employment experience. The candidate will learn to select and use the correct tools, equipment and materials required to manufacture an artefact(s). The candidate will also develop and use basic engineering fitting skills including:

- ◆ measuring, marking, cutting, shaping, drilling and tapping

Candidates will have the opportunity to review the employability skills they have developed across the range of practical experiences.

The Unit forms part of the *Engineering Skills (Intermediate 1)* Course but can also be taken as a free-standing Unit.

The primary target group for this Unit is school candidates in S3 and above.

OUTCOMES

- 1 Identify and use tools to measure and mark selected engineering materials.
- 2 Identify, select and use a range of metal working hand tools.
- 3 Manufacture an artefact(s) from simple working drawings.
- 4 Review and evaluate own employability skills in practical engineering contexts.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

Administrative Information

Superclass: XH

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National Unit Specification: general information (cont)

UNIT Engineering Skills: Mechanical (Intermediate 1)

CREDIT VALUE

1 credit at Intermediate 1 (6 SCQF credit points at SCQF level 4*).

**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.*

CORE SKILLS

There is no automatic certification of Core Skills in this Unit.

Opportunities for developing aspects of Core Skills are highlighted in *Guidance on Learning and Teaching Approaches for this Unit*.

National Unit Specification: statement of standards

UNIT Engineering Skills: Mechanical (Intermediate 1)

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 the Scottish Qualifications Authority.

OUTCOME 1

Identify and use tools to measure and mark selected engineering materials.

Performance Criteria

- (a) Identify common engineering materials and state a reason for use.
- (b) Identify a range of basic measurement tools correctly and clearly state their function.
- (c) Mark out workpieces accurately from simple drawings and material specifications.
- (d) Complete a quality check to ensure marked dimensions are within specified tolerances.
- (e) Safe working practices are correctly observed in all activities.

OUTCOME 2

Identify, select and use a range of metal working hand tools.

Performance Criteria

- (a) Identify a range of metal working hand tools correctly and clearly state their function.
- (b) Select and use a range of metal working hand tools correctly for given tasks.
- (c) Safe working practices are correctly observed in all activities.

OUTCOME 3

Manufacture an artefact(s) from simple working drawings.

Performance Criteria

- (a) Produce an artefact(s) from given working drawings and material specifications.
- (b) Functional dimensions of the artefact(s) are within specified tolerances.
- (c) The quality and finish of the completed artefact complies with the specification.
- (d) Safe working practices are correctly observed in all activities.
- (e) Complete a quality check on own finished artefact(s).

OUTCOME 4

Review and evaluate own employability skills in practical engineering contexts.

Performance Criteria

- (a) Review and evaluate own employability skills.
- (b) Seek and record feedback on own performance in employability skills.
- (c) Make a judgement on own strengths, weaknesses and learning points in relation to employability skills.
- (d) Identify action points for improvement in relation to employability skills.

National Unit Specification: statement of standards (cont)

UNIT Engineering Skills: Mechanical (Intermediate 1)

EVIDENCE REQUIREMENTS FOR THIS UNIT

Performance evidence and written/oral evidence is required to show that all Outcomes and Performance Criteria have been achieved.

Performance evidence will be supported by assessor checklists. This evidence will be generated from an integrated assignment consisting of practical activities carried out in supervised workshop conditions.

The evidence may be gathered at different points throughout the Unit.

The practical activities in the preparation planning and manufacture of an artefact in a safe manner will cover:

- ◆ identification, selection and a reason for use of the following common engineering materials:
 - Low carbon steel
 - Brass
 - Aluminium
 - Non-metallic

- ◆ interpretation of simple engineering drawings, which include the drawing symbols:
 - radius
 - diameter
 - countersunk
 - centre line

- ◆ selection, function and use of any four of the following tools to measure and mark out:
 - rule
 - scriber
 - square
 - dividers
 - caliper
 - protractor
 - hammer and centre punch

- ◆ selection and use of any four of the following hand tools to cut, shape, drill and tap:
 - hammer
 - chisel
 - hacksaw
 - tin snips
 - files
 - drills
 - taps

The artefact(s) will be completed using a material selected from:

- ◆ Low carbon steel
- ◆ Brass
- ◆ Aluminium
- ◆ Non-metallic

National Unit Specification: statement of standards (cont)

UNIT Engineering Skills: Mechanical (Intermediate 1)

Dimensions must be within the stated tolerance as expressed in the National Assessment Bank (NAB) material.

Candidates will be required to carry out a quality check before submitting their work for final assessment.

Written/oral evidence

Candidates will complete a self-evaluation review of their own performance against the following employability skills:

- ◆ maintaining good time-keeping
- ◆ maintaining a tidy workplace
- ◆ seeking advice and following instructions from supervisors
- ◆ cleaning and storing tools correctly after use
- ◆ recognising common engineering materials
- ◆ showing health and safety awareness
- ◆ positive attitude to learning and wearing appropriate PPE

A signed record of the review must be retained by the assessor as assessment evidence.

The National Assessment Bank item (NAB) for this Unit provides an appropriate practical assignment, an appropriate candidate review sheet and assessor checklists. These exemplify the national standard. Centres wishing to develop their own assessments should refer to the NAB to ensure a comparable standard.

