

National Unit Specification: general information

UNIT	Practical Experiences in Engineering (Access 3)
CODE	DX16 09
COURSE	Practical Experiences: Construction and Engineering (Access 3)

SUMMARY

This Unit is a mandatory Unit of the *Access 3 Practical Experiences: Construction and Engineering Course*, and is designed to be taken as part of that Course. The Unit is suitable for candidates with no previous engineering or employment experience. Candidates will select and use the basic tools and materials associated with engineering at an introductory level, leading to various practical activities and the manufacture of an artefact. The candidate will learn basic engineering terminology and skills during the process of the practical work.

Candidates who achieve this Course will build confidence in their ability to operate in a working environment and could progress to further Units at Access or Intermediate 1.

The primary target group for this Unit is school candidates in S3 and above. This Unit may also be suitable for adult returners.

OUTCOMES

- 1 Select and use basic engineering tools and materials in specified tasks.
- 2 Manufacture an artefact, to a given specification, using engineering materials.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

Administrative Information

Superclass:	TL
Publication date:	April 2007
Source:	Scottish Qualifications Authority
Version:	02

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National Unit Specification: general information (cont)

CREDIT VALUE

1 credit at SQA level 3 (6 SCQF credit points at SCQF level 3*).

**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 Practical Experiences in Engineering (Access 3)

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

Select and use basic engineering tools and materials in specified tasks.

Performance Criteria

- (a) Select and use mechanical and electrical engineering materials appropriate to the specified tasks.
- (b) Select and use tools appropriate to mechanical and electrical engineering for specified tasks.
- (c) Use tools correctly and solely for intended purpose.
- (d) Use basic engineering drawings and specifications for given tasks.
- (e) Comply with health and safety requirements during all specified tasks.

OUTCOME 2

Manufacture an artefact, to a given specification, using engineering materials.

Performance Criteria

- (a) Carry out all manufacturing steps from instructions given.
- (b) Carry out steps in an appropriate sequence according to the instructions given.
- (c) Complete the manufacture of the artefact to specified standards.
- (d) Comply with health and safety requirements during all specified tasks.

EVIDENCE REQUIREMENTS FOR THIS UNIT

Performance evidence is required to show that all Outcomes and Performance Criteria have been achieved, and will be supported by assessor checklists. This evidence will be generated from practical activities carried out in supervised workshop conditions and will be gathered from the preparation and completion of practical activities and the manufacture of the artefact.

The practical activities will provide the evidence of the selection of the appropriate tools and the correct use of those tools to perform the **following** tasks on **one** occasion:

- ◆ measure, cut, shape, drill and join metallic or non-metallic materials
- ◆ measure, cut and terminate, a minimum of **two** types of electrical cable
- ◆ manufacture an artefact in **either** metal **or** a non-metallic material:
 - in accordance with given specifications and instructions
 - in an appropriate sequence
 - to given standards

Candidates will be required to maintain a clean and tidy workplace, adhering to health and safety requirements, throughout all activities.

National Unit Specification: statement of standards (cont)

UNIT Practical Experiences in Engineering (Access 3)

The NAB item for this Unit provides assessor checklists and details of the practical assignments which exemplify the national standard. Centres wishing to develop their own assessments should refer to the NAB to ensure a comparable standard.

National Unit Specification: support notes

UNIT Practical Experiences in Engineering (Access 3)

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 covers practical engineering activities at a basic level. The candidate is required to develop the ability to select and use tools correctly and safely in the different activities in the Unit. It is therefore important that the learning takes place in a supervised workshop environment. Basic safe working practices will be included in the content as it is important that candidates learn to adhere to these at all times.

Candidates will work on a range of practical tasks, which will enable them to become familiar with a variety of tools and materials in the workshop. Lecturers/teachers may include a wide range of short practical activities to equip candidates with the skills necessary to complete an artefact. During the process of practical work the candidate will become accustomed to simple engineering terminology and will be able to demonstrate a basic knowledge and understanding of the terminology in everyday practice. Candidates should learn good working practices at each stage and how to carry out quality checks.

This Unit provides opportunities to develop generic employability skills such as time-keeping; working co-operatively; taking advice; maintaining a clean, tidy and organised workplace and thorough preparation. The context for learning should include the requirement to be clean, presentable and appropriately dressed for the workshop, wearing PPE including protective clothing when required.

Relevant aspects of current health and safety legislation, current COSHH Regulations and any systems of work relevant to the candidates' workshop/workplace should be explained and adhered to as part of the work of this Unit.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

This Unit involves learning through the various practical experiences and activities. Candidates should experience workshop conditions and should be encouraged to perform tasks and conduct themselves in a manner appropriate to the workplace. Visits to local industry could help to raise the candidate's awareness of the realities of the workplace. Equally, visiting speakers from local engineering firms should be encouraged. Useful material can be resourced from the Internet.

It is expected that, at this level, candidates will require some degree of teacher/lecturer support depending on their abilities. It is expected that candidates will work at a pace which suits their individual needs. Teachers/lecturers should consider the physical ability of individuals and groups when devising/adapting practical tasks.

Core Skills

In this Unit candidates will be involved in a range of practical tasks which may involve working as part of a small team. They will also be involved in tasks which require some measuring. These are good opportunities for developing aspects of the Core Skills of Working with Others and Numeracy.

National Unit Specification: support notes (cont)

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GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

The assessment activities in this Unit make an important contribution to the learning process.

If candidates are working as a team on practical assignments, assessors must satisfy themselves that candidates are competent in each aspect of the given task.

A NAB pack is available to support assessment of this Unit. It provides assessor observation checklists and details of the practical assignments which exemplify the national standard. If centres wish to develop their own assessment instruments these should be of a comparable standard.

CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).