



National Unit specification: general information

Unit title: Building Services Engineering: An Introduction
(SCQF level 4)

Unit code: FT88 10

Superclass: TH

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Summary

This is a mandatory unit of the Skills for Work Building Services Engineering award and is suitable for candidates with no previous engineering, technical or employment experience. Candidates will recognise the main industries (plumbing, electrical, heating and ventilating, refrigeration and air conditioning) and will develop an understanding of the job opportunities and the career progression opportunities. Candidates will learn the basic systems associated with each of the main industries whilst recognising the importance and nature of legislation and codes of practice. Candidates then focus on the employability aspect by reviewing their own position in the context of future job opportunities within the building services engineering (BSE) sector

Outcomes

- 1 Explain key aspects of the BSE sector.
- 2 Identify the main job opportunities and career pathways within the BSE sector.
- 3 Explain the nature and purpose of basic BSE industry systems and the importance of key legislation and codes of practice.

Recommended entry

Entry is at the discretion of the centre.

Credit points and level

0.5 National Unit credit at SCQF level 4 (3 SCQF credit points at SCQF level 4)

General information (cont)

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Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes of this Unit specification.

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

National Unit specification: statement of standards

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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 SQA.

Outcome 1

Explain key aspects of the BSE sector.

Performance Criteria

- (a) Identify the main industries within the BSE sector.
- (b) Describe the main impact that the BSE sector has on people and buildings.
- (c) Describe how the BSE sector interacts with the construction sector.

Outcome 2

Identify the main job opportunities and career pathways within the BSE sector.

Performance Criteria

- (a) Identify the main jobs within the BSE sector.
- (b) Identify the main career progression pathways within the BSE sector.

Outcome 3

Explain the nature and purpose of basic BSE industry systems and the importance of key legislation and codes of practice.

Performance Criteria

- (a) Explain the nature and purpose of basic BSE industry systems.
- (b) Explain the importance of key legislation and codes of practices within the BSE sector.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Evidence is required to demonstrate that the candidate has achieved all Outcomes and Performance Criteria.

Written and/or oral evidence should be produced to demonstrate that the candidate has achieved all the Outcomes and Performance Criteria. The evidence should be produced in the form of 'open book' supervised and controlled conditions.

The evidence may be produced by one or more than one assessment covering all Outcomes. A suitable instrument of assessment covering all Outcomes could be by short answer, restricted response and structured questions lasting no more than 45 minutes in duration.

Outcome 1: Written and/or oral evidence

Candidates must be able to do the following:

- ◆ Identify all of the following: electrical, heating and ventilating; plumbing; refrigeration and air conditioning.
- ◆ Describe the main impact that the BSE sector has on buildings and on people in terms of services provision to the building.
- ◆ Describe how the BSE sector interacts with the construction sector.

Outcome 2: Written and/or oral evidence

Candidates must identify all of the following:

- ◆ The main jobs within the BSE sector to include all of:
 - air conditioning engineer
 - domestic plumber
 - ductwork installer
 - gas fitter
 - heating installer
 - industrial and commercial plumber
 - installation electrician
 - maintenance electrician
 - refrigeration engineer
 - service and maintenance engineer
- ◆ Career progression opportunities for four of the jobs listed above.

National Unit specification: statement of standards (cont)

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Outcome 3: Written and/or oral evidence

Candidates must explain the following:

- ◆ The nature and purpose of the following:
 - electrical — power circuits, lighting circuits
 - heating and ventilating — cold water, hot water, heating, ductwork
 - plumbing — cold water, hot water, heating, sanitation
 - refrigeration and air conditioning — small refrigeration systems, small air conditioning systems
- ◆ The importance of key legislation and codes of practice as they apply to the BSE industries.
- ◆ The differences between British and European Standards, codes of practice, legislation.

National Unit specification: support notes

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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 20 hours.

Guidance on the content and context for this Unit

The content and context of this Unit is at a basic, introductory level. The main purpose of the Unit is to make candidates aware of, and prepare for employment within, the BSE sector in any of the main occupational areas of plumbing, electrical, heating and ventilating, and refrigeration and air conditioning.

Outcome 1 ensures that the candidate understands the main industries within the BSE sector (electrical, plumbing, heating and ventilating, refrigeration and air conditioning). Identification of the main impact that the BSE sector has on people and buildings will allow a broader and deeper understanding of the BSE sector as will recognition of how the BSE sector interacts with the construction sector.

Outcome 2 ensures that the candidate has an appreciation of the job and career development opportunities offered by the BSE sector.

Outcome 3 covers the nature and purpose of basic BSE industry systems, ie the types of systems that the candidate may work with if employed within the BSE sector. Candidates will also begin to develop a focus on the importance of key legislation and codes of practices within the BSE sector.

Guidance on learning and teaching approaches for this Unit

Candidates should be given opportunities to work towards Outcomes in an integrated way whenever possible.

Practical activities should be teacher/lecturer-led in that all equipment, techniques and processes should be explained, demonstrated and thoroughly understood before (candidate) commencement. Demonstrations should be clear, logically sequenced and reflect current safe working practices to ensure candidate understanding.

Opportunities for developing Core Skills

Throughout this Unit there may be opportunities for candidates to develop the Core Skill of *Communication* at SCQF level 4. This may be possible whilst the candidate is describing and explaining the responses during the assessment process.

National Unit specification: support notes (cont)

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Guidance on approaches to assessment for this Unit

An integrated approach to assessment across the Outcomes in this Unit is suggested. If this Unit is being delivered as part of the Skills for Work award the use of holistic assessment with other applicable Units is suggested. In addition, the project-based approach may be used to gather evidence of candidate achievement. Centres may also wish to develop the employability skills of the candidates through role-play techniques where appropriate.

In terms of the specific Outcomes of this Unit:

Outcome 1

It is recommended that candidates are assessed on their knowledge and understanding of the main industries within the BSE sector. This could be done by using a questioning method such as restricted response/short answer questions. This will ensure that candidates have the knowledge and understanding of the main industries within the BSE sector. It is also recommended that the questions used should sample across the PCs.

Outcome 2

It is recommended that candidates are assessed on their knowledge and understanding of how to identify the job opportunities and career pathways within the BSE sector. This could be done by using a questioning method such as restricted response/short answer questions. This will ensure that candidates have the knowledge and understanding of how to identify the job opportunities and career pathways within the BSE sector. It is also recommended that the questions used should sample across the PCs.

Outcome 3

It is recommended that candidates are assessed on their knowledge and understanding of how to recognise BSE industry systems and associated legislation. This could be done by using a questioning method such as restricted response/short answer questions. This will ensure that candidates have the knowledge and understanding of how to recognise BSE industry systems and associated legislation. It is also recommended that the questions used should sample across the PCs.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

National Unit specification: support notes (cont)

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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

History of changes to Unit

Version	Description of change	Date

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