



National Unit specification: general information

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

Unit code: FT83 11

Superclass: TH

Publication date: August 2011

Source: Scottish Qualifications Authority

Version: 01

Summary

This is a mandatory unit of the Skills for Work Building Services Engineering Award and is suitable for candidates with little or no previous engineering, technical or employment experience. The candidate will learn how to recognise and explain building services engineering (BSE) systems and components. The candidate will also develop an understanding of the BSE workplace, and develop employability skills, by learning about the people, companies, contracts and procedures associated with the BSE sector.

Outcomes

- 1 Explain the functions and components of typical BSE systems
- 2 Explain roles and responsibilities associated with working in the BSE sector
- 3 Explain the main documents and procedures associated with working in the BSE sector
- 4 Explain the main types of organisations working in the BSE sector

Recommended entry

Entry is at the discretion of the centre.

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5)

**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.*

General information (cont)

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

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

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

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 the functions and components of typical BSE systems.

Performance Criteria

- (a) Explain a range of BSE systems.
- (b) Explain the functions of BSE systems.
- (c) Explain the main components of BSE systems.

Outcome 2

Explain roles and responsibilities associated with working in the BSE sector.

Performance Criteria

- (a) Explain the main career and progression opportunities in building services engineering.
- (b) Explain key roles and responsibilities of 'off site' based members of the BSE work team.
- (c) Explain key roles and responsibilities of 'on site' based members of the BSE work team.
- (d) Explain key roles and responsibilities of typical site visitors.

Outcome 3

Explain the main documents and procedures associated with working in the BSE sector.

Performance Criteria

- (a) Explain the purpose and procedures of documents typically used in the BSE workplace.
- (b) Explain the purpose and procedures of documents typically provided to customers/clients.

Outcome 4

Explain the main types of organisations working in the BSE sector.

Performance Criteria

- (a) Explain the different types of businesses with which BSE companies typically engage
- (b) Explain the range of communication methods and documentary procedures that may be relevant to working with: the types of businesses with which BSE companies typically engage
- (c) Explain the main differences between domestic and industrial/commercial contracts

National Unit specification: statement of standards (cont)

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

Evidence Requirements for this Unit

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

The evidence may be produced by one or more than one assessment covering all Outcomes.

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

In terms of the specific outcomes of this Unit:

Outcome 1: Written and/or oral evidence

Candidates must be able to explain of the following:

- ◆ The functions of three typical BSE systems used in either one or more of the following buildings: a domestic building; a large building used by business and/or the public; commercial and industrial buildings and structures.
- ◆ Four main components of BSE systems typically found in: building environmental management; electrical; heating and ventilating; plumbing; refrigeration and air conditioning.

Outcome 2: Written and/or oral evidence

Candidates must be able to explain 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.
- ◆ Three key roles of each of the following 'off site' based members of the BSE work team: architect, clerk of works, client, consultants, customer, estimator, main contractor, quantity surveyor, sub contractor, supplier/wholesaler contracts manager.
- ◆ Three key roles of the following 'on site' based members of the BSE work team: apprentices, building services engineers, building services operatives (installation, maintenance, servicing), electrical, plumbing, H&V including ductwork, RAC, signal reception, domestic electrical appliances, chargehand, foreman, H&S officer, site manager, supervisor, unskilled operatives.
- ◆ Three key roles of each of the following typical site visitors: Building Control Inspector, Electrical Services Inspector, HSE Inspector, training officers and assessors, Water Inspector.

National Unit specification: statement of standards (cont)

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

Outcome 3: Written and/or oral evidence

Candidates must be able to identify and explain all of the following:

- ◆ The purpose and procedures of documents typically used in the BSE workplace for four of the following: delivery notes, job specifications, plans/drawings, policy documentation (health and safety, environmental, customer service), purchase orders, time sheets, work programmes.
- ◆ The purpose and procedures of documents typically provided to customers/clients for four of the following: account statements, contract variations, contracts, estimates, handover information (commissioning documents, installation certificates etc), invoices, quotations/tenders.

Outcome 4: Written and/or oral evidence

Candidates must be able to identify and explain all of the following:

- ◆ The different types of businesses with which BSE companies typically engage including: contractors, public funded bodies (eg NHS, local authorities, sole traders).
- ◆ The range of communication methods and documentary procedures that may be relevant to working with the type of company listed above.
- ◆ The main differences between domestic and industrial/commercial contracts in terms of four of the following: access requirements; arrangement of variations/additional work requirements; documentary and reporting procedures; health and safety requirements; key personnel to contact in relation to work-related problems/issues; key personnel with whom to liaise on job progress; tools, equipment and materials delivery and storage requirements; work site organisation.

National Unit specification: support notes

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

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

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 covers the purpose and types of BSE systems that are used in different types of property. The candidate will develop a deeper understanding of how these systems and (BSE) industries relate.

Outcome 2 develops a deeper candidate understanding of the workplace in terms of the people involved where the roles and responsibilities of on-site and off-site team members and site visitors.

Outcome 3 develops a deeper candidate understanding of the workplace in terms of the types of documentation typically used in the BSE sector and the procedures that support them.

Outcome 4 develops a deeper candidate understanding of the workplace in terms of the types of organisation/company typically encountered and the potentially different communications methodology appropriate to dealing them. This outcome helps the candidate to develop an understanding of the differences between domestic and commercial work.

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.

An integrated approach to learning and teaching across the outcomes in this Unit, and relevant others, is suggested.

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)

Unit title: Building Services Engineering: Systems, Roles, Responsibilities and Procedures (SCQF level 5)

Guidance on approaches to assessment for this Unit

An integrated approach to assessment across the outcomes in this Unit is suggested. If this is being delivered as part of the National Progression Award the use of holistic assessment with other applicable Units is suggested. A suitable instrument of assessment covering all Outcomes could be by short answer, restricted response and structured questions lasting no more than 60 minutes in duration. In addition, the project-based approach may be used to gather evidence of candidate achievement.

It is recommended that candidates are assessed on their knowledge and understanding of the BSE systems and components. This could be done by using a questioning method such as restricted response/short answer questions. This could also be assessed if integrated with other Units from the National Progression Award Building Services Engineering. This will ensure that candidates have the knowledge and understanding of the BSE systems and components. It is further recommended that the knowledge and understanding is tested ahead of the candidates undertaking any practical work. It is also recommended that 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)*.

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

© Scottish Qualifications Authority 2011

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre, telephone 0845 279 1000.