



**DRAFT MINIMUM QUALIFICATION
REQUIREMENTS**

**APPRENTICESHIP
QUALIFICATION IN
BUILDING SERVICES
ENGINEERING**

Apprenticeship Qualification in Building Services Engineering

Purpose

The Apprenticeship Qualification in Building Services Engineering allows learners to demonstrate the range of their occupational knowledge, skills and understanding in a building services engineering trade of their choice. Designed to be completed on a part-time basis within an apprenticeship, this level 3 qualification will allow learners to develop their knowledge, understanding and occupational performance against nationally-recognised occupational standards.

In addition to meeting these standards and being fully portable throughout the UK, the qualification will develop learners' ability to meet the demands of the building services engineering sector in Wales, including working with the significant traditional building stock and in using new and emerging technologies. After having demonstrated their performance and capability to the satisfaction of their employer, learners will undertake the assessments set out in this document.

Proposed aims and objectives

The specification for the Apprenticeship Qualification in Building Services Engineering must enable learners to develop:

- The scope and range of their occupational knowledge and understanding in a chosen building services engineering trade;
- The scope and range of their occupational performance in a chosen building services engineering trade in a work context;
- Their ability to effectively plan work projects using the appropriate skills for a chosen building services engineering trade and in a work environment;
- Their ability to effectively review and evaluate the quality of their completed work in a chosen building services engineering trade and in a work environment;
- Their knowledge and understanding of the tools, techniques, materials and technologies used in a chosen building services engineering trade and of how they change, and have changed, over time;
- Their employability skills and their ability to utilise them in a work environment.

Proposed subject content

The specification for the Apprenticeship Qualification in Building Services Engineering must cover the following learning areas:

Learning Area 1 – Trade knowledge and understanding

Learning Area 2 – Trade performance

Learning Area 3 – Working in the building services engineering sector in Wales.

The specification must also require learners to specify at the outset of the qualification the particular trade route, including any relevant specialism, that they have chosen. A trade route will be available and appropriate for study on the Apprenticeship Qualification in Building Services Engineering if a suite of national standards is available and is widely recognised.

The content of each learning area should be relevant to learners' practice in the chosen trade or trade specialism.

Learning Area 1

The specification for the Apprenticeship Qualification in Building Services Engineering must require learners to develop the full range of **knowledge and understanding** required in the relevant national standards for the chosen trade or trade specialism.

Learning Area 2

The specification for the Apprenticeship Qualification in Building Services Engineering must require learners to develop the full range and scope of the **performance** required of them by the national standards for the chosen trade or specialism.

Learning Area 3 – Working in the building services engineering sector in Wales

The specification for the Apprenticeship Qualification in Building Services Engineering must require learners to develop their knowledge and understanding of and skills in:

Topic	Content – including, but not limited to:
a. Trade bodies, organisations and registrations	<ul style="list-style-type: none">• The role of building services engineering industry trade bodies and of representation.• The role of industry certification schemes and the types of registration available.
b. The built environment in Wales	<ul style="list-style-type: none">• The range of building stock in Wales, the variety of forms, purposes and periods.• Projects in the chosen building services engineering trade in process or planned for development.• The interdependencies on practice in this trade from workers in other trades and disciplines.
c. Materials, tools and techniques	<ul style="list-style-type: none">• The tools, materials and techniques that have been used in this building services engineering trade on traditional (pre-1919) builds.• The tools, materials and techniques being used in contemporary practice in this building services engineering trade.• New and emerging technologies in this building services engineering trade and the impact they are having/may have on existing practice.
d. Trades and the environment	<ul style="list-style-type: none">• The principles of sustainability that apply to practice in this trade.• The changing environmental impact of practice in this trade, including the changing use of materials (where appropriate).• The relevant waste disposal, waste reduction and recycling principles relevant to practice in this trade.
e. Planning and reviewing work	<ul style="list-style-type: none">• Planning work that meets the requirements of clients, employers and other stakeholders.• Evaluating the quality of work to identify areas of improvement and to improve future outcomes.

Proposed assessment arrangements

The specification for the Apprenticeship Qualification in Building Services Engineering must require:

Learners to have demonstrated their occupational competence to the satisfaction of both the employer and of the centre, through the production of a portfolio of evidence and be registered for assessment on this qualification no earlier than this point;

That learners be assessed through:

- On-screen assessments (B2 and B3)
- A practical project
- A professional discussion;

That learners studying a 'lower-uptake' or 'emerging' trade be permitted to sit shorter, truncated versions of on-screen assessments B2 and B3, and substitute this for a presentation of trade knowledge to an external assessor *or* an extended professional discussion which demonstrates this trade knowledge (until arrangements have been made for the 'lower-uptake' or 'emerging' trade to be assessed by the fuller B2 and B3 assessments);

That the following ranges be applied to the weighting of the assessments in calculating the final grade:

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|---|--------|
| • On-screen assessment (and any relevant additional knowledge test) (B2 and B3) | 20% |
| • Practical project | 50-60% |
| • Professional discussion (inc. lower-uptake) | 20-30% |

and that for each trade route the specification specifies the weightings that have been ascribed;

That learners complete the on-screen assessment B2 before completing the on-screen assessment B3;

That learners' achievement in the on-screen assessment B2 be recognised if they have completed a Progression Qualification in Building Services Engineering before beginning this qualification.

Proposed assessment objectives

The specification for the Apprenticeship Qualification in Building Services Engineering must require that the assessment of the knowledge, skills and understanding required in the specification targets the following assessment objectives in line with the indicated ranges:

AO	Description	Weighting
AO1	Demonstrate the knowledge and understanding required in a building services engineering trade in Wales and the UK.	20-30%
AO2	Apply the knowledge, skills and understanding required to perform a building services engineering trade.	40%
AO3	Effectively plan workplace tasks, understanding the requirements of performing work on different buildings and projects.	15-20%
AO4	Review and evaluate the quality of work completed in the workplace and reflect on the knowledge, skills and understanding required in its completion.	15-20%

Proposed scheme of assessment

The specification for the Apprenticeship Qualification in Building Services Engineering must demonstrate that the scheme of assessment balances the considerations of manageability, engagement, reliability and validity. The specification must ensure that:

- the assessment arrangements are, overall, manageable for both centres and learners;
- the assessment arrangements are, overall, sufficiently engaging for learners and promote and sustain learners' interest in the subject area;
- the assessment arrangements will ensure the reliability of assessment outcomes, at centre and national level and over time;

- the assessment arrangements are a valid form of assessment for the skills, knowledge and understanding being assessed.

The specification must require that learners are graded at either Pass, Merit, Distinction or Fail and that they achieve at least a Pass grade in each assessment component to be awarded an overall mark.

Assessment	Requirements	Size and Minimum C coverage
<p>On-screen assessment (B2)</p> <p><i>To be externally assessed.</i></p>	<ul style="list-style-type: none"> • Must require a high level of control without access to reference material; • Must be of a multiple-choice format, incorporating a range of question styles; • Must use enhancements such as audio-visual stimulus material; • Must recognise the prior attainment of learners who have completed B2 as part of the Progression Qualification in Building Services Engineering. 	<p>Must sample a range of the knowledge and understanding required in Learning Areas 1 and 3.</p> <p>AO1 AO2</p>
<p>On-screen assessment (B3)</p> <p><i>To be externally assessed.</i></p>	<ul style="list-style-type: none"> • Must require a high level of control without access to reference material; • Must include but not be limited to a range of multiple-choice format question styles; • Must use enhancements to multiple-choice question styles such as audio-visual materials; • Must use question types that are highly valid in their assessment of the required knowledge and understanding. 	<p>Must sample the knowledge and understanding required in Learning Areas 1 and 3.</p> <p>AO1 AO2</p>
<p>Practical project</p> <p><i>To be internally assessed and externally verified.</i></p>	<ul style="list-style-type: none"> • Must require learners to undertake one or more projects in the workplace, from which tangible outcomes are produced; • Must require learners to demonstrate knowledge, understanding and performance criteria required in the trade RQS/suite; • May require learners to undertake either: 	<p>Learning Areas 1, 2 and 3e.</p> <p>The project must show coverage of a significant proportion of</p>

	<ul style="list-style-type: none"> ○ Two or more projects in the workplace totalling 80 GLH; <i>or</i> ○ One larger project in the workplace totalling 80 GLH; ● Must include planning and evaluation stages; ● Must be agreed upon by the learner, the employer and the learning provider in advance of commencement. 	<p>the relevant RQS/ occupational standards.</p> <p>AO1 AO2 AO3 AO4</p>
<p>Professional discussion</p> <p><i>To be carried out by an external assessor.</i></p>	<ul style="list-style-type: none"> ● Must require learners to reflect on the knowledge, skills and understanding required in the completion of the practical project; ● Must require learners to explain the impact changing contexts may have on similar practical projects in buildings from different periods or with different needs (e.g. those from clients or employers or with different sustainability requirements); ● Must be of a specified duration. 	<p>Learning Areas 1, 2 ,3b, 3c, 3d and 3e.</p> <p>AO1 AO3 AO4</p>
<p>Lower-uptake or emerging trade</p> <p><i>To be carried out by an external assessor.</i></p>	<ul style="list-style-type: none"> ● Must require learners who have undertaken truncated B2 and B3 tests in lower-uptake or emerging trades to complete this assessment; ● Must sample the knowledge and understanding required in this trade area that is not covered in B2 or B3; <ul style="list-style-type: none"> ○ May take either the form of an extension to the professional discussion; or ○ a presentation by the learner to the external assessor. 	<p>Learning Area 1.</p> <p>AO1 AO2</p>

Additional content from other units may be assessed in the methods described above, as deemed suitable.

‘Main’ or ‘priority’ trades

The trades which are considered ‘main’ or ‘priority’ trades, and for which suitable on-screen assessments must be available at the start of the lifetime of the qualification, are:

- Domestic plumbing and heating

- Gas engineering
- Heating and ventilating occupations
- Installing electrotechnical systems and equipment.