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Llywodraeth Cymru  
Welsh Government

# 0713 Welsh Apprenticeship Pathway

## in

# Heating and Ventilating

# Installation & Craftsperson

The content of this Pathway has been agreed by the expert Steering Group facilitated by BSE Skills. This is the only Heating and Ventilating Installation & Craftsperson Apprenticeship Pathway in the Building Services Engineering sector approved for use in Wales that is eligible for Welsh Government funding.

More Information can be obtained from:

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Gwefan • website: [www.llyw.cymru](http://www.llyw.cymru)  
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## LEARNING PROGRAMME CONTENT

The Learning Programme provision shall comprise of three mandatory elements:

- Qualifications,
- Essential Skills
- On/off the job training

The total minimum credit value required for this Level 3 Pathway is 79 credits.

## ENTRY REQUIREMENTS

This Apprenticeship is suitable for learners who:

- are aged 16+ currently working in the trade area
- have passed all relevant sector specific entry assessment (where appropriate)
- have achieved one or more of the following (or recognised equivalent):
  - Foundation in Construction and the Built Environment qualification at Level 2
  - Progression in Building Services Engineering qualification at Level 2\*
  - Welsh Baccalaureate National Diploma
  - GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject (e.g. Design & Technology, Electronics etc)
  - GCSE grade A-C in WJEC GCSE Built Environment
  - Level 2 'Access to Building Services Engineering' qualification and/or equivalent qualifications\*

\*This qualification may be considered as a proxy for the Foundation and Core qualifications during the transition period which runs to 31 December 2023.

## APPRENTICESHIP PATHWAY LEARNING PROGRAMME(S)

### Level 3: Heating and Ventilating Installation

#### Qualifications

Participants must achieve the following *knowledge* and the *combined* qualification(s) below.

Level 2 - Core in Construction and Building Services Engineering					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
City & Guilds	C00/4414/0	41	410	Knowledge	English-Welsh

Please note that any learner who has already achieved either the Foundation in Construction and the Built Environment qualification at Level 2 or Progression in Building Services Engineering qualification at Level 2 or achieved a Level 2 or 3 Certificate or Diploma in the trade in which the apprenticeship is to be undertaken will not be required to undertake/achieve the Core.

<b>Level 3 - Heating and Ventilating Installation</b>					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
EAL	C00/4278/5	79	792	Combined	English or Welsh

### **Essential Skills Wales (ESW)**

Essential Skills Wales qualifications assessment languages are English-Welsh.

<b>Level 3: Heating and Ventilation</b>	<b>Level</b>	<b>Minimum Credit Value</b>
Communication	2	6
Application of Number	2	6
Digital Literacy	2	6

Note that evidence for Essential Skills can/should be gathered holistically and from other activities so as not to remove learning time from the main trade areas.

### **On/Off the Job Training (guidance only)**

<b>Pathway</b>	<b>Minimum On the Job Training Hours</b>	<b>Minimum Off the Job Training Hours</b>
Level 3: Heating and Ventilation	4480	672

These hours may be different for experienced/older workers depending on their industry experience. The hours cover learning and development undertaken in a range of settings, including in the workplace when under the direction of a relevant trainer, e.g. workplace mentor. Centres and employers should work closely together in determining what proportion of the training will take place within centres and in workplace settings.

### **Level 3: Heating and Ventilating Craftsperson**

#### **Qualifications**

Participants must achieve the following *knowledge* and the *combined* qualification(s) below.

<b>Level 2 - Core in Construction and Building Services Engineering</b>					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
City & Guilds	C00/4414/0	41	410	Knowledge	English-Welsh

Please note that any learner who has already achieved either the Foundation in Construction and the Built Environment qualification at Level 2 or Progression in Building Services Engineering qualification at Level 2 or achieved a Level 2 or 3 Certificate or Diploma in the trade in which the apprenticeship is to be undertaken will not be required to undertake/achieve the Core.

<b>Level 3 - Heating and Ventilating Craftsperson</b>					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
EAL	C00/4278/6	118	1176	Combined	English or Welsh

### **Essential Skills Wales (ESW)**

Essential Skills Wales qualifications assessment languages are English-Welsh.

<b>Level 3: Heating and Ventilation</b>	<b>Level</b>	<b>Minimum Credit Value</b>
Communication	2	6
Application of Number	2	6
Digital Literacy	2	6

Note that evidence for Essential Skills can/should be gathered holistically and from other activities so as not to remove learning time from the main trade areas.

### **On/Off the Job Training (guidance only)**

<b>Pathway</b>	<b>Minimum On the Job Training Hours</b>	<b>Minimum Off the Job Training Hours</b>
Level 3: Heating and Ventilation	6720	960

These hours may be different for experienced/older workers depending on their industry experience. The hours cover learning and development undertaken in a range of settings, including in the workplace when under the direction of a relevant trainer, e.g. workplace mentor. Centres and employers should work closely together in determining what proportion of the training will take place within centres and in workplace settings.

### **OTHER ADDITIONAL REQUIREMENTS**

The Apprentice, depending on their specialist areas of work, is required to achieve at least one optional certificates/certifications (**or their recognised equivalents**) as shown below.

<b>Certificate</b>	<b>Certification Body (example)</b>	<b>Installer</b>	<b>Craftsperson</b>
Wiring Regulations (BS7671)	ECA/NET	Optional	Optional
Unvented Hot Water	BPEC	Optional	Optional
Oil	OFTEC	Optional	Optional
Gas ACS*	EUskills	Optional	Mandatory
Welding	BESCA	Optional	Optional
Install, Test, Commission and Handover Heat Pump Systems	BPEC	Optional	Mandatory
Micro-renewables Technologies: Water harvesting and recycling technologies	BPEC	Optional	Mandatory

\*Learner to complete the Gas Safety assessments (limited scope) designed for operatives who will be installing commercial pipework greater than 35mm for the purpose of transporting gas. Unit references (commonly used in sector) are ICPN1 and ICPN1LS.

Note that the Mandatory requirements are considered part of the Apprenticeship and are covered by the Welsh Government funding.

## **JOB ROLES**

This Pathway specifies the standards and criteria for the Level 3 Apprenticeship for the Heating and Ventilating Installer and Craftsperson. Successful achievement of all the components of this Pathway will lead to the award of a Level 3 qualification and recognition as a qualified Installer and/or Craftsperson within the sector.

This Pathway has two pathway routes:

- Heating and Ventilating Installation

The Heating and Ventilating (H&V) Installer will install, maintain and repair central heating, ventilation and air conditioning systems.

- Heating and Ventilating Craftsperson

The Heating and Ventilating (H&V) Craftsperson will install, maintain and repair central heating, ventilation and air conditioning systems. They work on large-scale equipment including boilers, tanks and large pipes.

There is significant crossover between the other related parts of the Building Services sector sectors. More broadly, the H&V industry embraces technical operations and projects relevant to the installation, servicing and maintenance, in industrial and commercial properties, of:

- Heating
- Ventilation
- Heat recovery

- Energy management
- Hot and cold water systems
- Fire prevention and protection
- Pipework service and maintenance

Directly associated with these operations and projects are occupation areas which are specific to H&V industry which include:

- Installing, maintaining and servicing heating and ventilating systems
- Commissioning heating and ventilating systems
- Installing and commissioning ductwork and pipework systems
- Installing, maintaining and commissioning air conditioning systems
- Installing, maintaining and commissioning refrigeration systems

The H&V industry is increasingly carrying out a wider range of tasks and projects, which include:

- Principal contractors on construction engineering projects such as shopping and entertainment complexes, sports stadiums, hospitals, hotels and office blocks
- Controlled building management systems – heating; air conditioning; environmental control
- Complex installations in buildings and structures for commercial, industrial, recreational and transport purposes
- Design, construction, installation and maintenance of building services for complex industrial manufacturing and processing

The modern H&V Installer and Craftsperson is at the forefront of technology (design, development, testing, installation, maintenance) associated with low carbon targets, energy conservation and renewable supply.

This Apprenticeship is designed to provide individuals with the opportunity to develop the skills and knowledge that are needed to carry out the installation and/or maintenance of H&V systems in commercial, industrial and residential buildings including all relevant:

- Technological requirements and changes
- Statutory and Non- Statutory Regulations & Requirements
- Working practices in accordance with Health and Safety requirements
- Inspection, testing and commissioning procedures

On completion of the requirements in this Pathway the Apprentice should, as a minimum, have the core skills and core knowledge required to carry out the following in a safe and competent manner:

- Apply health and safety and environmental legislation in the building services engineering sector
- Establish and maintain relationships in the building services engineering sector
- Coordinate a work site in the building services engineering sector
- Prepare, Fabricate and Install a range of domestic, commercial and industrial Heating and Ventilation Systems including hot/cold/chilled water, fuel, hydronic heating
- Install, Test, Commission and Decommission Complex Building Service Engineering Pipework Systems
- Weld industrial and commercial heating and ventilating pipework

In addition, the Apprentice should also be able to:

- Apply professional judgement and support
- Challenge unsafe behaviours/activities
- Demonstrate innovation through the identification of areas for improvement and suggestion and/or development of innovative solutions
- Identify and manage risks to self and others
- Keep work area clean and tidy
- Manage own time effectively
- Think logically and accordance with the demands of the situation using clear and valid reasoning when making decisions to undertake the work instructions
- Work effectively individually and in a team
- Work in accordance with quality requirements
- Work productively
- Work safely and ensure the safety of others
- Work within own level of competence and know when to seek advice from others

Throughout the Apprenticeship process the Apprentice should, as a minimum, develop and display the behaviours that show them to be consistently:

1. Assertive
2. Confident
3. Dressed appropriately
4. Empathetic
5. Fair
6. Honest
7. Proactive
8. Productive
9. Punctual
10. Reliable
11. Respectful (in terms of equality, diversity and inclusion)

## **PROGRESSION**

The aim of this Pathway is to ensure that the successful learners gain:

- The Skills and Knowledge required by the industry to achieve competence
- Job related skills that will be used in the working environment
- Knowledge and skills aligned to working practices, relevant statutory and non-statutory regulations
- Transferable and Core Skills
- The basis for career progression

When apprentices have completed this Pathway, they have a number of progression options to them including:

- Vocational: develop self in the role and seek promotion
- Academic: use the qualifications gained as the basis for further study and entry to Further Education or Higher Education as appropriate (e.g. to undertake HNC and/or HND qualifications)
- Combination of Vocational and Academic: undertake part time study while still working. This may be as part of a structured Higher Level Apprenticeship (HLA) with a recognised Building Services pathway such as the Built Environment HLA which incorporates the HNC/HND qualifications.



More specifically, on successful completion of this Apprenticeship an apprentice will be furnished with the skills and knowledge, and have the qualifications to:

- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering
- Technology & Project Management or Foundation Degree in Engineering
- Progress onto the Level 6 Apprenticeships related to this field such as in Building Services Engineering Technology & Project Management
- Progress in their career with further training into such job roles as Technician, Designer, Estimator, Project Manager, Site/Workshop Supervisor/ Manager, Chartered Engineer, Sales Engineer or Commercial Manager.

Further career guidance can be found at <https://www.thebesa.com/>

Continuous learning will be expected of the qualified candidates in order to maintain awareness of the regulations impacting on the industry and technological changes/advances.

### **EQUALITY & DIVERSITY**

It is important that apprenticeship Pathways are inclusive and can demonstrate an active approach to identifying and removing barriers to entry and progression. Pathways should advance equality of opportunity between persons who share protected characteristics and those persons who do not as identified in the Equality Act 2010.

The protected characteristics identified in the Equality Act are age, disability, gender re-assignment, race, religion or belief, sex, sexual orientation, pregnancy and maternity. Marriage and civil partnership is also included although only in respect of the requirement to eliminate discrimination in employment.

Training providers and employers MUST also comply with the other duty under the Equality Act 2010 to ensure that applicants are not discriminated against in terms of entry to the industry based upon those nine protected characteristics.

The Heating and Ventilation Industry has not, historically, been a traditional career choice for women. However, women do qualify and work successfully in the industry and this is encouraged.

The sectoral bodies work at local, regional and national levels to identify and address issues around equality and diversity. This work is supported by local/national government, non-governmental bodies/agencies and relevant Unions.

It is a requirement that apprentice recruitment is open and fair to all who meet the selection criteria, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability.

All partners involved in the delivery of the apprenticeship and employers must be committed to a policy of equal opportunities and must have a formal equal opportunities policy and procedure in place.

Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation such as the Equality Act 2010.

Providers will monitor equality of opportunity practice and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.

## **EMPLOYMENT RESPONSIBILITIES AND RIGHTS (ERR)**

Employment Responsibilities and Rights (ERR) is no longer compulsory. But it is recommended that all apprentices (especially the 16 years -18 year group) receive a company induction programme.

## **RESPONSIBILITIES**

It is the responsibility of the Training Provider and Employer to ensure that the requirements of this pathway are delivered in accordance with the Welsh Government Apprenticeships Guidance.

### **Further information may be obtained from:**

Welsh Government

**[DfES-ApprenticeshipUnit@gov.wales](mailto:DfES-ApprenticeshipUnit@gov.wales)**