apprenticeship FRAMEWORK

Refrigeration & Air Conditioning (Wales)

Latest framework version?

For any previous versions of this framework: www.acwcerts.co.uk/framework_library

Issue date: 13 November 2018

Published By	
Instructus	Apprenticeship Certification Wales https://acwcerts.co.uk/web/

Refrigeration & Air Conditioning (Wales)

Contents

Contents

Framework information

Information on the Issuing Authority for this framework:

Instructus

The Apprenticeship sector for occupations in air conditioning, building services engineering, business and administration, cleaning, customer service, digital/information technology, electro technical, electrical and electronic servicing, enterprise and business support, facilities management, heating and ventilating, housing, human resources and recruitment, industrial relations, leadership and management, marketing and sales (also includes contact centres and third sector), plumbing, property and refrigeration.

Issue number: 4	**This framework includes:**
Framework ID: FR04370	Level 2 ☒ Level 3 ☒ Level 4-7 ☐
Date this framework is to be reviewed by: 31/10/2023	**This framework is for use in: Wales**

Short description

Apprenticeships for occupations in the Refrigeration and Air Conditioning Industry are designed to meet the competence requirements of the industry.

Roles in this framework are likely to fit into Standard Occupational Code (SOC): 52

This Apprenticeship Framework document contains six occupation framework pathways at two different levels:

Foundation (Level 2)

- Refrigeration
- Air Conditioning.

Whichever occupation framework pathway is chosen at Foundation (Level 2), it will provide an opportunity for individuals to gain the skills and knowledge necessary for a career in an established industry and for employers and apprentices to benefit from

the associated structured learning and assessment programme.

Successful completion of a Foundation (Level 2) framework will reflect the ability to select and use relevant knowledge, ideas, skills and procedures to complete well defined tasks and address straightforward problems. They include taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.

The apprentice also has the competencies to progress to an associated Apprenticeship (Level 3) framework.

These Foundation (Level 2) frameworks can be completed within 24 months.

Job roles covered are:

- Refrigeration Operative
- Air Conditioning Operative.

Apprenticeship (Level 3)

- Refrigeration
- Refrigeration Service and Maintenance
- Air Conditioning
- Air Conditioning Service and Maintenance.

Whichever occupation framework pathway is chosen at Apprenticeship (Level 3), it will provide an opportunity to further develop the skills, knowledge and competence to the level required by job roles such as:

- Refrigeration Technician
- Air Conditioning Technician
- Refrigeration Service and Maintenance Technician
- Air Conditioning Service and Maintenance Technician.

Normally entry to Apprenticeship (Level 3) occupation framework would be through completion of the relevant Foundation (Level 2) framework or alternatively proven knowledge/experience to an equivalent level.

Successful completion of an Apprenticeship (Level 3) framework reflects the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. This includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgement within parameters. They also reflect awareness of different perspectives or approaches within an area of study or work.

These Apprentice (Level 3) frameworks can be completed within 24 months.

Contact information

Proposer of this framework

Former Summit Skills, the Standards Setting Organisation for the Refrigeration and Air Conditioning industry, regularly engages with employers, government departments, manufacturers, trade associations and training providers to ensure that this framework document is fit-for-purpose at the time it is issued.
Additional engagement activities include direct consultations by email and telephone with stakeholders.

Developer of this framework

Name:	Tony Beecher
Organisation:	Instructus Skills (former Summit Skills)
Organisation Type:	Standard Setting Body
Job Title:	Standards and Portfolio Manager
Phone:	01536 738 631
Email:	skills@instructus.org
Postal address:	Unit 3 Cherry Hall Road North Kettering Business Park Kettering NN14 1UE
Website:	www.instructus-skills.org

Issuing Authority's contact details

Issued by:	Instructus
Issuer contact name:	Damian Brown
Issuer contact phone:	01536 738 631
Issuer Email:	skills@instructus.org

Who is making this revision	Larisa Puk
Your organisation	Instructus Skills
Your email address:	skills@instructus.org

Revising a framework

Why this framework is being revised

This framework has been updated by Instructus Skills in order to amend contact details, and ensure all qualifications are up to date.

Summary of changes made to this framework

This framework has been updated by Instructus Skills in order to amend contact details, and ensure all qualifications are up to date.

Level 3, Pathway 1: Refrigeration is withdrawn due to qualification no longer available to new learners.

Level 3, Pathway 3: Air Conditioning is withdrawn due to qualification no longer available to new learners.

Qualifications removed

Level 3 NVQ Certificate in Installing and Commissioning Refrigeration Systems - City & Guilds - 600/0907/X

Level 3 NVQ Certificate in Installing and Commissioning Air Conditioning and Heat Pump Systems - City & Guilds - 600/0900/7

Qualifications added

None

Qualifications that have been extended

N/A

Purpose of this framework

Summary of the purpose of the framework

The occupation frameworks in this document are designed to provide new entrants and those seeking career progression, with the opportunity to develop competencies needed to carry out job roles and responsibilities associated with the installation, maintenance and commissioning of refrigeration and air conditioning systems, including relevant:

- Sustainable Building Best Practices
- Environmental technologies
- Technological requirements and changes
- Statutory and non-statutory regulations and requirements.

The following job roles will be covered by the Foundation (Level 2) occupation pathways:

- Refrigeration Operative
- Air Conditioning Operative.

The following job roles will be covered by the Apprenticeship (Level 3) occupation pathways:

- Refrigeration Technician
- Air Conditioning Technician
- Refrigeration Service and Maintenance Technician
- Air Conditioning Service and Maintenance Technician.

Aims and objectives of this framework (Wales)

The aim of the occupation frameworks is to ensure that the Foundation (Level 2) and Apprenticeship (Level 3) programmes deliver:

- The skills and knowledge required by the industry to achieve competence
- Job-related skills that will be used in the working environment
- Transferable skills
- Career progression.

Employers have endorsed this programme as it delivers qualified competent employees and improves productivity and retention.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

Entry conditions for this framework

Although there are generally no nationally laid-down minimum entry or previous experience requirements to undertake the Foundation (Level 2) and Apprenticeship (Level 3) frameworks in the Refrigeration and Air Conditioning Industry, the following selection criteria may be used as guidance.

- The programme is likely to be suitable for individuals who:
- Have an aptitude for technical subjects and/or are practically minded
- Have an interest in technology
- Can demonstrate an ability to solve practical problems.

A career in the Refrigeration and Air Conditioning Industry will not only reward an apprentice's potential, but also offer opportunities to enhance their technical capability. The industry always needs individuals of appropriate ability, and in return offers a varied and rewarding career in a challenging working environment.

Other selection criteria may include:

- Motivation to succeed
- Willingness to learn and apply that learning in the workplace/job role
- Enthusiasm and attitude to work
- Ability to demonstrate that they have the potential to achieve the qualifications which are part of the Foundation (Level 2) and/or Apprenticeship (Level 3) programmes
- Ability to communicate effectively with a range of people
- Being numerate and literate
- Good colour vision to recognise colour-coded wires and components
- Ability to work at heights or in confined spaces
- Willingness to work outside
- Willingness to work unsociable hours
- Willingness to undergo Disclosure and Barring Service (DBS) check when required.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete either the Foundation (Level 2) or Apprenticeship (Level 3) can be found in the individual occupation pathways.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Level 2

Title for this framework at level 2

Foundation (Level 2) Apprenticeships in Refrigeration and Air Conditioning

Pathways for the framework at level 2:

Pathway 1:   Refrigeration
Pathway 2:   Air Conditioning

Level 2, Pathway 1: Refrigeration

Description of this pathway

Refrigeration - Installation and maintenance of refrigeration systems - 84 credits in total.

Entry requirements for this pathway in addition to the framework entry requirements

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Foundation (Level 2) framework in Refrigeration are:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- GCSE grade A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification.

Job title(s)	Job role(s)
Refrigeration Operative	Works under minimal supervision to complete the installation, assembly, fitting, testing and de-commissioning of refrigeration systems

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – Level 2 NVQ Diploma in Installing and Maintaining Refrigeration Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/0913/5	City & Guilds	66	540	660

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the combined qualifications section B1 above.

Qualification Title - Level 2 NVQ Diploma in Installing and Maintaining Refrigeration Systems which has:

Knowledge Units

- Understand how to communicate with others within Building Services Engineering J/602/2482 *Unit Credit Value 3*

- Understand how to apply environmental protection measures within BSE D/602/2486 *Unit Credit Value 4*
- Understand how to apply scientific principles within MES J/602/2496 *Unit Credit Value 7*
- Understand refrigeration system installation, testing and maintenance techniques M/602/4999 *Unit Credit Value 7*

Knowledge Element = 21 credits

Competence Units

- Understand and carry out safe working practices in building services engineering J/602/2479 *Unit Credit Value 10*
- Apply safe working practices in building services engineering working environments T/602/2493 *Unit Credit Value 2*
- Install, test and maintain refrigeration systems J/502/7932 *Unit Credit Value 4*
- Handling fluorinated gases and ozone-depleting substances - category 1 personnel D/502/0629 *Unit Credit Value 3*
- Understand and carry out site preparation and pipework fabrication techniques for RAC systems R/602/4994 *Unit Credit Value 14*

plus either -

- Understand and carry out electrical work on RAC systems and components K/602/4998 *Unit Credit Value 12*

or

- Understand and carry out electrical work on RAC systems and components T/504/0305 *Unit Credit Value 12*

Competence Element = 45 credits

Total Qualification = 66 credits

For further qualification details refer to: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement <u>above</u> the minimum SASW requirement?   YES   ☒   NO   ☐

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

Communication Essential Skills required at Level 2

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement <u>above</u> the minimum SASW requirement?   YES   ☒   NO   ☐

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

Application of Number Essential Skills required at Level 2

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework? **YES** ☒ **NO** ☐

Digital Literacy (ICT)

Please note that there are currently no acceptable proxy qualifications for Digital Literacy (ICT).

For the current **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Digital Literacy (ICT) achievement above the minimum SASW requirement? YES ☐ NO ☒

If YES, please state the grade/level required for **Digital Literacy (**ICT) and give a brief **REASON** as to why this is required:

Enter alternative grade/level requirements and reasons here.

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes from this pathway:

On successful completion of the Intermediate Level Apprenticeship in Refrigeration , an apprentice will have the skills, knowledge and qualifications to:

- Register on an appropriate Certification Scheme
- Progress to learning and assessment programmes that lead to relevant Level 3 qualifications and/or an Apprenticeship (Level 3) in Refrigeration or Refrigeration Service and Maintenance

- Progress in their career into such job roles such as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO**   ☒

Delivery and assessment

All apprentices MUST receive an induction to the workplace and to the apprenticeship programme. ERR will be delivered through one of two options, either a checklist or workbook, which will ensure that the apprentice knows and understands each of the nine national outcomes for ERR. The workbook has been designed to enable apprentices to work their way through a series of questions and activities which will bring ERR to life, making the learning more meaningful and long lasting and enhance the employability skills of the apprentice. Having this choice gives apprentices the flexibility to complete the ERR in a way that is most appropriate to them.
The Instructus Skills ERR workbook, available from the Instructus Skills E-learning portal (elearning.instructus.org)
RECOGNITION OF ERR:

Level 2, Pathway 2: Air Conditioning

Description of this pathway

Air Conditioning - Installing, maintaining and repairing air conditioning and heat pump systems - 84 credits in total.

Entry requirements for this pathway in addition to the framework entry requirements

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Foundation (Level 2) framework in Air Conditioning are:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- GCSE grade A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

Job title(s)	Job role(s)
Air Conditioning Operative	Works under minimal supervision to complete the installation, assembly, fitting, testing and de-commissioning of air conditioning and heat pump systems

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/0912/3	City & Guilds	66	540	660

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the combined qualifications section B1 above.

Qualification Title - Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems which has:

Knowledge Units

- Understand how to communicate with others within building services engineering

Apprenticeship Certification Wales

J/602/2482 *Unit Credit Value 3*

- Understand how to apply environmental protection measures within BSE D/602/2486 *Unit Credit Value 4*
- Understand how to apply scientific principles within MES J/602/2496 *Unit Credit Value 7*
- Understand air conditioning and heat pump system installation, testing and maintenance techniques A/602/4987 *Unit Credit Value 7*

Knowledge Element = 21 credits

Competence Units

- Understand and carry out safe working practices in building services engineering J/602/2479 *Unit Credit Value 10*
- Apply safe working practices in building services engineering working environments T/602/2493 *Unit Credit Value 2*
- Install, test and maintain air conditioning and heat pump systems D/602/5002 *Unit Credit Value 4*
- Understand and carry out site preparation and pipework fabrication techniques for RAC systems R/602/4994 *Unit Credit Value 14*
- Handling fluorinated gases and ozone-depleting substances - category I personnel D/502/0629 *Unit Credit Value 3*

plus either -

- Understand and carry out electrical work on RAC systems and components K/602/4998 *Unit Credit Value 12*

or

- Understand and carry out electrical work on RAC systems and components T/504/0305 *Unit Credit Value 12*

Competence Element = 45 credits

Total Qualification = 66 credits

For further qualification details refer to: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement above the minimum SASW requirement?   YES   ☒   NO   ☐

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

Communication Essential Skills required at Level 2

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement above the minimum SASW requirement?   YES   ☒   NO   ☐

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

Application of Number Essential Skills required at Level 2

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework?   **YES**   ☒   **NO**   ☐

Digital Literacy (ICT)

Please note that there are currently no acceptable proxy qualifications for Digital Literacy (ICT).

For the current **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Digital Literacy (ICT) achievement <u>above</u> the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for **Digital Literacy (**ICT) and give a brief **REASON** as to why this is required:

Enter alternative grade/level requirements and reasons here.

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes from this pathway:

On successful completion of the Foundation (Level 2) in Air Conditioning , an apprentice will have the skills, knowledge and qualifications to:

- Progress in their career into such job roles such as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

- Register on an appropriate Certification Scheme
- Progress to learning and assessment programmes that lead to relevant Level 3 qualifications and/or an Apprenticeship (Level 3) in Air Conditioning or Air Conditioning Service and Maintenance

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO**   ☒

Delivery and assessment

This is no longer a mandatory requirement

All apprentices MUST receive an induction to the workplace and to the apprenticeship programme. ERR will be delivered through one of two options, either a checklist or workbook, which will ensure that the apprentice knows and understands each of the nine national outcomes for ERR. The workbook has been designed to enable apprentices to work their way through a series of questions and activities which will bring ERR to life, making the learning more meaningful and long lasting and enhance the employability skills of the apprentice. Having this choice gives apprentices the flexibility to complete the ERR in a way that is most appropriate to them.

The Instructus Skills ERR workbook, available from the Instructus Skills E-learning portal (elearning.instructus.org)

RECOGNITION OF ERR:

On completion of the ERR checklist or workbook, the evidence must be placed in the apprentice's portfolio for quality assurance purposes. The workbook declaration of completion must be signed by the apprentice and training provider, or employer as proof that the ERR element has been completed.

Level 3

Title for this framework at level 3

Apprenticeships (Level 3) in Refrigeration & Air Conditioning

Pathways for the framework at level 3:

Pathway 1:   Refrigeration - WITHDRAWN
Pathway 2:   Refrigeration Service and Maintenance
Pathway 3:   Air Conditioning - WITHDRAWN
Pathway 4:   Air Conditioning Service and Maintenance

Level 3, Pathway 1: Refrigeration - WITHDRAWN

Description of this pathway

This pathway is withdrawn due to the qualification no longer available to new learners.

Entry requirements for this pathway in addition to the framework entry requirements

N/A

Job title(s)	Job role(s)
Refrigeration Technician	Completes and oversees the installation, testing, commissioning and de-commissioning of refrigeration systems and components

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – Level 3 NVQ Certificate in Installing and Commissioning Refrigeration Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	000/0000/0	WITHDRAWN	00	000	000

Relationship between competence and knowledge qualifications

N/A

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement <u>above</u> the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

Enter alternative grade/level requirements and reasons here.

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement <u>above</u> the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

```
Enter alternative grade/level requirements and reasons here.
```

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework?   **YES** ☐   **NO** ☒

Progression routes into and from this pathway

N/A

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO**   ☒

Delivery and assessment

Framework Developer to complete with relevant info

Apprenticeship Certification
Wales

Level 3, Pathway 2: Refrigeration Service and Maintenance

Description of this pathway

Refrigeration Service and Maintenance - the service and maintenance of refrigeration systems and components - 55 credits minimum total.

Entry requirements for this pathway in addition to the framework entry requirements

The Refrigeration Industry would normally expect entry into this framework to be for those who have already completed an Intermediate Level Apprenticeship in Refrigeration, or for individuals with the experience and knowledge comparable with the requirements of that programme.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Apprenticeship (Level 3) in Refrigeration Service and Maintenance are:

- Foundation (Level 2) framework in Refrigeration
- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects
- A Level 2 'Access to Building Services Engineering' qualification.

Job title(s)	Job role(s)
Refrigeration Service and Maintenance Technician	Completes and oversees the servicing and maintenance of refrigeration systems and components

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – Level 3 NVQ Certificate in Servicing and Maintaining Refrigeration Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/0991/3	City & Guilds	37	312	370

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Certificate in Servicing and Maintaining Refrigeration Systems which has:

Knowledge Units

- Understand how to organise resources within BSE R/602/2498 *Unit Credit Value 3*
- Understand halocarbon 'fluorinated' refrigeration system service and maintenance

techniques H/502/9302 *Unit Credit Value 19*

Knowledge Element = 22 credits

Competence Units

- Service and maintain halocarbon 'fluorinated' refrigeration systems F/502/9307 *Unit Credit Value 3*

Plus either -

- Understand and carry out electrical work on RAC systems and components K/602/4998 *Unit Credit Value 12*

or

- Understand and carry out electrical work on RAC systems and components T/504/0305 *Unit Credit Value 12*

Competence Element = 15 credits

Total Qualification = 37 credits

For further qualification details refer to: register.ofqual.gov.uk/ and search for the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

> Enter alternative grade/level requirements and reasons here.

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

> Enter alternative grade/level requirements and reasons here.

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework?   **YES**   ☐   **NO**   ☒

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation (Level 2) framework in Refrigeration
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes from this pathway:

On successful completion of the Apprenticeship (Level 3) framework in Refrigeration Service and Maintenance, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- 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
- Take a relevant Trade Test to demonstrate competence to work in other UK countries
- 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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO**   ☒

Delivery and assessment

All apprentices MUST receive an induction to the workplace and to the apprenticeship programme. ERR will be delivered through one of two options, either a checklist or workbook, which will ensure that the apprentice knows and understands each of the nine national outcomes for ERR. The workbook has been designed to enable apprentices to work their way through a series of questions and activities which will bring ERR to life, making the learning more meaningful and long lasting and enhance the employability skills of the apprentice. Having this choice gives apprentices the flexibility to complete the ERR in a way that is most

appropriate to them.

The Instructus Skills ERR workbook, available from the Instructus Skills E-learning portal (elearning.instructus.org)

RECOGNITION OF ERR:

On completion of the ERR checklist or workbook, the evidence must be placed in the apprentice's portfolio for quality assurance purposes. The workbook declaration of completion must be signed by the apprentice and training provider, or employer as proof that the ERR element has been completed.

Level 3, Pathway 3: Air Conditioning - WITHDRAWN

Description of this pathway

This pathway is withdrawn due to the qualification no longer available to new learners.

Entry requirements for this pathway in addition to the framework entry requirements

N/A

Job title(s)	Job role(s)
Air Conditioning Technician	Completes and oversees the installation, assembly, fitting, testing, commissioning and de-commissioning of air conditioning and heat pump systems and associated components

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – Level 3 NVQ Certificate in Installing and Commissioning Air Conditioning and Heat Pump Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	000/0000/0	WITHDRAWN	00	000	000

Relationship between competence and knowledge qualifications

N/A

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

Enter alternative grade/level requirements and reasons here.

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

> Enter alternative grade/level requirements and reasons here.

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework?   **YES** ☐   **NO** ☒

Progression routes into and from this pathway

N/A

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO** ☐

Delivery and assessment

N/A

Level 3, Pathway 4: Air Conditioning Service and Maintenance

Description of this pathway

Air Conditioning Service and Maintenance - the service and maintenance of air conditioning and heat pump systems and associated components - 52 credits in total.

Entry requirements for this pathway in addition to the framework entry requirements

The Air Conditioning Industry would normally expect entry into this framework to be for those who have already completed an Intermediate Level Apprenticeship in Air Conditioning, or for individuals with the experience and knowledge comparable with the requirements of that framework.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Advanced Level Apprenticeship in Air Conditioning Service and Maintenance are:

- Foundation (Level 2) framework in Air Conditioning
- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects
- A Level 2 'Access to Building Services Engineering' qualification.

Job title(s)	Job role(s)
Air Condtioning Service and Maintnenance Technician	Completes and oversees the servicing and maintenance of air conditioning and heat pump systems and associated components

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 – - Level 3 NVQ Certificate in Servicing and Maintaining Air Conditioning and Heat Pump Systems					
No.	**Ref no.**	**Awarding organisation**	**Credit value**	**Guided learning hours**	**UCAS points value**
B1a	600/0909/3	City & Guilds	34	282	340

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Certificate in Servicing and Maintaining Air Conditioning and Heat Pump Systems which has:

Knowledge Units

- Understand how to organise resources within BSE R/602/2498 *Unit Credit Value 3*
-

Apprenticeship Certification Wales

Understand halocarbon 'fluorinated' air conditioning and heat pump service and maintenance techniques T/502/8915 *Unit Credit Value16*

Knowledge Element = 19 credits

Competence Units

- Service and maintain halocarbon 'fluorinated' air conditioning and heat pump systems F/502/8920 *Unit Credit Value 3*

Plus either -

- Understand and carry out electrical work on RAC systems and components K/602/4998 *Unit Credit Value 12*

or

- Understand and carry out electrical work on RAC systems and components T/504/0305 *Unit Credit Value 12*

Competence Element = 15 credits

Total Qualification = 34 credits

For further qualification details refer to: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number.

Where Essential Skills qualifications are specified in an apprenticeship framework, the apprenticeship framework must specify the acceptance of a recognised proxy qualification for Communication and Application of Number.

Communication

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Communication achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for English and give a brief **REASON** as to why this is required:

> Enter alternative grade/level requirements and reasons here.

Application of Number

For the current list of acceptable proxy qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

Does this framework require Application of Number achievement above the minimum SASW requirement?   YES   ☐   NO   ☒

If YES, please state the grade/level required for Maths and give a brief **REASON** as to why this is required:

```
Enter alternative grade/level requirements and reasons here.
```

Inclusion of Digital Literacy (ICT)

Digital Literacy (ICT) is an **optional** framework requirement.

Is Digital Literacy a requirement in this framework?   **YES**   ☐   **NO**   ☒

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation (Level 2) framework in Air Conditioning
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes from this pathway:

On successful completion of the Apprenticeship (Level 3) in Air Conditioning Service and

Maintenance, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- 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
- Take a relevant Trade Test to demonstrate competence to work in other UK countries
- 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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Apprenticeship Certification Wales

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework?   **YES**   ☐   **NO**   ☒

Delivery and assessment

This is no longer a mandatory requirement

All apprentices MUST receive an induction to the workplace and to the apprenticeship programme. ERR will be delivered through one of two options, either a checklist or workbook, which will ensure that the apprentice knows and understands each of the nine national outcomes for ERR. The workbook has been designed to enable apprentices to work their way through a series of questions and activities which will bring ERR to life, making the learning more meaningful and long lasting and enhance the employability skills of the apprentice.

Having this choice gives apprentices the flexibility to complete the ERR in a way that is most appropriate to them.

The Instructus Skills ERR workbook, available from the Instructus Skills E-learning portal (elearning.instructus.org)

RECOGNITION OF ERR:

On completion of the ERR checklist or workbook, the evidence must be placed in the apprentice's portfolio for quality assurance purposes. The workbook declaration of completion must be signed by the apprentice and training provider, or employer as proof that the ERR element has been completed.

How equality and diversity will be met

The nature of the work means that the Refrigeration & Air Conditioning Industry is not a traditional career choice for women, but women do qualify and work successfully in the industry and this is encouraged. We are continuing to work with the UK Resource Centre for Women in Science, Engineering and Technology and the Young Woman's Trust to promote the opportunities for women working within the building services engineering sector.

Instructus Skills will have overall responsibility for the development and review of the framework and for monitoring equality of opportunity, primarily by the analysis of the National Apprenticeship Service data.

There should be open recruitment of apprentices 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.

On and off the job training

Summary of on- and off-the-job training

Foundation (Level 2) Frameworks

Overview of Refrigeration Qualification Total - 540 hrs (Knowledge elements 192 hrs + Competence elements 348 hrs)

Essential Skills (ES) - 135 hrs (notional value of 45 hrs per ES x 3, which can be offset if previously completed)

Mentoring - 92 hrs (based on 46 wks x 2 hrs)

Minimum total Training Hours for this framework is 767 hrs

Overview of Air Conditioning

Qualification Total - 540 hrs (Knowledge elements 192 hrs + Competence elements 348 hrs)

Essential Skills (ES) - 135 hrs (notional value of 45 hrs per ES x 3, which can be offset if previously completed)

Mentoring - 92 hrs (based on 46 wks x 2 hrs)

Minimum total Training Hours for this framework is 767 hrs

Apprenticeship (Level 3) Frameworks

Overview of Refrigeration – WITHDRAWN

N/A

Overview of Refrigeration Service and Maintenance

Qualification Total - 312 hrs (Knowledge elements 206 hrs + Competence elements 106 hrs)

Essential Skills (ES) - 90 hrs (notional value of 45 hrs per ES x 2, which can be offset if previously completed)

Mentoring - 230 hrs (based on 92 wks x 2.5 hrs)

Minimum total Training Hours for this framework is 632 hrs

Overview of Air Conditioning - WITHDRAWN

N/A

Overview of Air Conditioning Service and Maintenance

Qualification Total - 282 hrs (Knowledge elements 176 hrs + Competence elements 106 hrs)

Essential Skills (ES) - 90 hrs (notional value of 45 hrs per ES x 2, which can be offset if previously completed)

Mentoring - 230 hrs (based on 92 wks x 2.5 hrs)

Minimum total Training Hours for this framework is 602 hrs

Off-the-job training

Foundation (Level 2) Frameworks Refrigeration

Minimum total off-the-job Training Hours is 583 hrs over 24 months
Yr 1 - 292 hrs
Yr 2 - 291 hrs

Air Conditioning

Minimum total off-the-job Training Hours is 583 hrs over 24 months

Yr 1 - 292 hrs
Yr 2 - 291 hrs

Apprenticeships (Level 3) Frameworks

Refrigeration – WITHDRAWN

N/A

Refrigeration Service and Maintenance

Minimum total off-the-job Training Hours is 402 hrs over 24 months

Yr 1 - 201 hrs
Yr 2 - 201 hrs

Air Conditioning - WITHDRAWN

N/A

Air Conditioning Service and Maintenance

Minimum total off-the-job Training Hours is 372 hrs over 24 months
Yr 1 - 186 hrs
Yr 2 - 186 hrs
-
How this requirement will be met

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful achievement of the framework and these may include accredited and non-accredited elements of the framework.

Training Hours will be delivered through one or more of the following methods: individual and

group teaching; e-learning; distance learning; feedback and assessment; guided study. All Training Hours delivery must be completed while undertaking apprenticeship training and will take place during contracted working hours.

This will be evidenced by training provider attendance statistics and assessment reports. When claiming the Apprenticeship certificate, training providers will be required to sign the Apprenticeship Certificate Claim form, stating that the total training hours have been met by the learner. The Claim Form can be downloaded from ACW: https://acwcerts.co.uk/web/form s-documentation

On-the-job training

Foundation (Level 2) Frameworks

Refrigeration

Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

Air Conditioning

Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs

Yr 2 - 92 hrs

Apprenticeship (Level 3) Frameworks

Refrigeration - WITHDRAWN

N/A

Refrigeration Service and Maintenance

Minimum total on-the-job Training Hours is 230 hrs over 24 months

- Yr 1 - 115 hrs
- Yr 2 - 115 hrs

Air Conditioning - WITHDRAWN

N/A

Air Conditioning Service and Maintenance

Minimum total on-the-job Training Hours is 230 hrs over 24 months

-

Yr 1 - 115 hrs
- Yr 2 - 115 hrs

These are the minimum number of Training Hours that should be allocated for the apprentice to gather evidence in accordance with the requirements of the integrated qualification and mentoring.

How this requirement will be met

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful achievement of the framework and these may include accredited and non-accredited elements of the framework.

Training Hours will be delivered through one or more of the following methods: coaching; mentoring; feedback and assessment; collaborative/ networked learning with peers. All Training Hours delivery must be completed while undertaking apprenticeship training and will take place during contracted working hours.

This will be evidenced by apprentices' portfolios, employer dialogue, qualification assessment records and reports.

As part of the evidence requirements for Apprenticeship Completion certification, a copy of a completed Apprentice Consent Form may be requested. ACW: https://acwcerts.co.uk/web/form s-documentation

Wider key skills assessment and recognition

While Wider Key Skills are not a **mandatory** part of the framework, training providers are encouraged to provide apprentices the opportunity to achieve them.

For this framework, there are natural opportunities for Wider Key Skills to be embedded within the mandatory units of the following qualifications:

Enter Qualification Names

Improving own learning and performance

Give examples - signpost to specific units in framework qualifications that would meet these requirements

Working with others

Give examples - signpost to specific units in framework qualifications that would meet these requirements

Problem solving

Give examples - signpost to specific units in framework qualifications that would meet these requirements

apprenticeship FRAMEWORK

For more information visit-
www.acwcerts.co.uk/framework_library