apprenticeship
FRAMEWORK

Metal Processing and Allied Operations (Craft and Technician) (Wales)

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Apprenticeships

Metal Processing and Allied Operations (Craft and Technician) (Wales)

Contents

Framework summary

Metal Processing and Allied Operations (Craft and Technician)

Apprenticeship in Metal Processing and Allied Operations

Pathways for this framework at level 3 include:

Pathway 1: Metal Processing

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations (QCF)

C2 - Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF)

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology (QCF)

K2 - City & Guilds Level 3 Diploma in Engineering (QCF)

K3 - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF)

K4 - EAL Level 3 Diploma in Casting Technology (QCF)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Framework information

Information on the Publishing Authority for this framework:

SEMTA

The Apprenticeship sector for occupations in science, engineering and manufacturing technologies.

Issue number: 1	**This framework includes:**
Framework ID: FR01861	Level 3
Date this framework is to be reviewed by: 28/02/2014	This framework is for use in: **Wales**

Short description

The framework for Metal Processing and Allied Operations at Level 3 has been designed to provide the skills, knowledge and competence requirements to work in the manufacture of metals at an appropriate level within the metal processing sectors in Wales.

Contact information

Proposer of this framework

Semta has worked closely with its Metals Sector Skills Group (SSG) to define National Occupational Standards (NOS). From the NOS, qualifications such as NVQs and Technical Certificates have been developed that are suitable for use within apprenticeship frameworks.

Key to providing appropriate skills training is to ensure that new entrants to these industries receive state of the art competence and knowledge training that meets both current and future needs. Metal Processing Apprenticeships at levels 2 & 3 will ensure that 16 to 25 yr olds are given the appropriate skills necessary to contribute to this important industry.

Developer of this framework

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Purpose of this framework

Summary of the purpose of the framework

Sector background

The basic metals sector in Wales employs 9,900 people across 80 establishments. The largest subsector in terms of employment is the manufacture of basic iron and steel and of ferro-alloys (77% of total employment).

Focusing on technical roles only, it is estimated that 7,700 engineers, scientists and technologists work across the basic metals sector in Wales.

Micro-sized establishments (less than 10 employees) account for 44% of total establishments but only 1% of employment within the basic metals sectors in Wales. Large establishments (250 plus employees) make up less than 13% of establishments but account for around 79% of total employment.

Employment trends (2008 to 2011)

The basic metals sector in Wales has experienced a period of major restructuring between 2008 to 2011, with a net loss of 1,900 jobs (-16%), compared with a decrease in employment of 3% across all sectors in Wales.

By subsector, the largest reductions in employment occurred in the manufacture of basic, precious and other non-ferrous metals (-1,300 jobs) and the manufacture of other products of first processing of steel (-400 jobs).

Current Employment

In total there are 5,200 people working in operator, craft and technician roles within the basic metals sector in Wales. This consists of 2,200 operators, **2,800 craftspersons and 200 technicians employed in technical roles.**

Key occupations in the wider industry

• Craftspersons: metalworking production and maintenance fitters, electricians and electrical fitters and tool makers and fitters
• Technicians: draughtspersons, engineering technicians, quality assurance technicians

Demographic profile of those in operator, craft and technician occupations

Full-time: 99%
Female: 4%
Age 16-24: 4%
Age 60+: 4%
Have a disability: 16%
Ethnicity (non-white): <1%
Proportion of total sectoral employment: 53%

Vacancies

In 2011, 36% of basic metals establishments in Wales had vacancies; none had operator vacancies, 14% had craft vacancies and 14% had technician vacancies.

Overall, 14% of basic metals employers in Wales had hard-to-fill vacancies; 7% had hard-to-fill vacancies for craftspersons and 7% had hard-to-fill vacancies for technicians.

Current skills and qualifications

Approximately 62% of those working in operator, craft and technician occupations within the basic metals sector have qualifications at NVQ Level 2 or above. However, some 2,000 people within in these occupational groups either have qualifications below NVQ Level 2 or have no qualifications.

Skill needs and gaps

In 2011, 14% of basic metals establishments in Wales had employees with skills gaps. Overall, 12% of basic metals establishments in Wales had employees with technical skills gaps.

The main impact of skills gaps were increased workload for other staff, increased operating costs, difficulties meeting quality standards and difficulties introducing new working practices. The main action taken by basic metals employers to overcome skills gaps was to increase training activity/spend or increase/expand trainee programmes.

Future skills demand

When taking into account retirements, it is expected there will be a recruitment requirement for around 1,050 engineers across operator (450 recruits), craft (450 recruits) and technician (150 recruits) occupations into the basic metals sector in Wales over the period 2013-2017.

Sources of data

- Business Register Employment Survey (BRES) 2011
- Inter Departmental Business Register (IDBR) 2011
- Employer Skills Survey (ESS) 2011
- Labour Force Survey (LFS) 2010
- Semta Employment Forecasts 2012

The Apprenticeship in Metal Processing and Allied Operations will help address both the current skills requirements but also the future needs for both craft persons and technicians as stated above. It will also address the skills gaps and shortages identified and ensure a steady flow of new craftpersons and technicians into the metals industry.

Aims and objectives of this framework (Wales)

The aim of this framework is to attract young people into an expanding and exciting industry, and will provide apprentices with the skills, underpinning knowledge and transferable skills required to operate at craft or technician level in a metals manufacturing environment carrying out a wide variety of defined manufacturing activities.

Further aims and objectives:

- Develop more technicians through Apprenticeships
- Incorporate the latest developments in metal processing National Occupational Standards (NOS) at Level 3
- Provide greater unit flexibility through the QCF
- Provide a metal processing pathway that meets manufacturing employers needs
- Help improve recruitment and retention rates within the industry by offering appropriate career progression
- Improve productivity rates and profitability (increased GVA per person)
- Address current skills gaps and shortages
- Address future skills demands
- To better address equality and diversity within the sector as defined above in the framework summary above
- To tackle the age profile within the sub-sector
- To help reduce the carbon footprint by maximising efficiency and eliminating waste
- Increase the level of general literacy and numeracy through transferable skills
- Provide a pathway into higher level Metal Processing and Allied Operations careers and training
- To provide a pathway to foundation degree and undergraduate programmes for those

who choose this route
- Develop apprentices employability and skills making them more attractive to all employers whichever career they choose.

Entry conditions for this framework

Employers wish to attract applicants who have an interest to work in the metals processing industry.

The Metal Processing and Allied Operations Apprenticeship is suitable for applicants who have five GCSEs grade C or above including Maths, English, and a Science. This is not a hard and fast rule but may vary according to the pathway (craft or technician) and the suitability of individual applicants.

Employers in the metal processing industry welcome applicants from a diverse range of backgrounds and anticipate that they will have a wide range of experience, achievements and qualifications.

Employers would be interested in applicants who:

- have previous work experience or employment in the sector or
- have completed the Foundation Apprenticeship in Metal Processing and Allied Operations or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- are keen and motivated to work in a metal processing environment or
- are willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship in Engineering or other related area or
- have a Welsh Baccalaureate or
- have completed a Pathways to Apprenticeship programme or
- have completed the Essential Skills Wales (ESW) or Wider Key Skills qualifications or
- have an interest in problem solving and organising activities or
- have completed tests in basic numeracy, literacy and communication skills and have spacial awareness

The selection process on behalf of employers may include initial assessment activity such tests in basic numeracy, literacy, communication skills and spatial awareness. There may also be an interview to ensure potential apprentices have selected the right occupational sector to meet their needs and expectations and those of their employer.

Learners who have completed the Welsh Baccalaureate may have completed units or short courses which will provide underpinning knowledge towards the Apprenticeship, this will be assessed during an initial assessment allowing Recognition of Prior Learning (RPL) where appropriate.

Rules to avoid the need to repeat qualifications

Processes exist to make sure that applicants with prior knowledge, qualifications and or experience are not disadvantaged by having to repeat learning. Training providers, Colleges and Awarding Organisations will be able to advise applicants on the current rules for accrediting prior learning and recognising prior experience. There are no relaxations or proxies for any qualifications specified in a framework in SASW, however providers are encouraged to identify additional on-the-job training programmes that customise the learning to the new workplace.

It is understood that where applicants have accredited prior learning that apprentices must be offered training which helps them to develop new skills and learning at a higher level.

Essential Skills Wales

Key skills are accepted as alternatives to Essential Skills Wales qualifications, provided the Key Skills Certificate(s) attained are at the same level(s) as those specified for Essential Skills Wales Qualifications.

Knowledge qualifications

If applicants already have one of the Level 3 knowledge qualifications before they started their Apprenticeship (see knowledge qualifications page in this framework), they can count this and do not have to redo the qualification, providing that they have achieved this qualification within 5 years of applying for the apprenticeship certificate. For example, they may have already achieved the knowledge element as part of the Welsh Baccalaureate. The hours they spent gaining this qualification will also count towards the minimum hours required for this framework.

Competence qualifications

It is unlikely that applicants will already have the Level 3 Competence Qualification stated, as it is a new qualification. However they may have individual QCF units at Level 2, such as PEO which can be APL'd into the extended Diploma providing they have achieved these within five years of starting their apprenticeship. It is important however that there is agreement between the employer and the apprentice that the applicant is currently competent.

As with the knowledge element above, the hours that were spent gaining the competence qualification may be counted towards the total hours for the apprenticeship.

The Welsh Baccalaureate with its Core programme of personal learning and development studies along with options such as NVQs, Vocational Qualifications and Principal Learning (Engineering World, Discovering Engineering Technology and Engineering the Future) could provide significant opportunities for accreditation of Prior Learning against the components of this framework. The same processes can be applied to GCSEs. Training providers/colleges should be able to advise entrants on the potential reduction in programme duration that could result from accrediting previous qualifications and experience.

Initial Assessment

Training providers/colleges and employers will use initial assessment to ensure that applicants have a fair opportunity to demonstrate their ability and to tailor programmes to meet individual needs, recognising prior qualifications and experience.

Accreditation of Prior Learning

Applicants already working in the sector will be able to have their prior experience recognised by the awarding organisation and this will count towards the competence, knowledge and Essential Skills Wales qualifications in this framework.

Level 3

Title for this framework at level 3

Apprenticeship in Metal Processing and Allied Operations

Pathways for this framework at level 3

Pathway 1:	Metal Processing

Level 3, Pathway 1: Metal Processing

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 213 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF) - total minimum pathway credit value = 186 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1337 training hours

- Competence = minimum 433 hours/ minimum 132 credits
- Knowledge = minimum 480 hours (smallest technical certificate) / minimum 54 credits
- Essential Skills Wales (notional value 60 hours x 3) = 180 hours /18 credits **or Key skills at the same level 135 hrs /15 credits**
- Wider Key Skills = 120 hours / 2 x 6 = 12 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours
- ERR = 15 minimum hours

Year 1 = 382 Hours Year 2 = 382 Hours Year 3 = 382 Hours Year 4 = 191 Hours

Minimum off-the-job training hours = 904 training hours
Knowledge - City & Guilds Level 3 Diploma in Engineering (QCF) (480 training hours) plus 424 additional training hours for Key Skills at the same level as Essential Skills Wales, Wider Key Skills, ERR and Mentoring

Minimum on-the-job training hours = 433 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations (QCF)

Minimum credit value = 132 credits

Pathway with maximum total learning hours = 1,622 training hours

- Competence = 433 hours/ 132 credits
- Knowledge = maximum 720 hours (based on the largest technical certificate training hours)
- Knowledge = maximum 120 credits (based on the largest technical certificate credit)
- **Essential Skills Wales (notional value 60 hours x 3) = 180 hours /18 credits** or Key skills at the same level 135 hrs /15 credits
- Wider Key Skills = 120 hours / 2 x 6 = 12 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours
- ERR = 15 minimum hours

Year 1 = 463 Hours Year 2 = 463 Hours Year 3 = 463 Hours Year 4 = 233 Hours

Maximum off-the-job training hours = 1189 training hours
Knowledge - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF) (720 training hours) plus 469 additional training hours for Essential Skills Wales, Wider Key Skills, ERR and Mentoring

Maximum on-the-job training hours = 433 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations (QCF)

Maximum credit value = 282 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Note: This NVQ Diploma qualification is for adult apprentices 25 years and over only who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with relevant health and safety training.

Pathway with minimum total learning hours = 1214 training hours

- Competence = minimum 310 hours/ minimum 105 credits
- Knowledge = minimum 480 hours (smallest technical certificate) / minimum 54 credits
- Essential Skills Wales (notional value 60 hours x 3) = 180 hours /18 credits **or Key skills at the same level 135 hrs /15 credits**
- Wider Key Skills = 120 hours / 2 x 6 = 12 credits

• Mentoring 154 weeks x 1 hour/week = 154 hours
• ERR = 15 minimum hours
Year 1 = 347 Hours Year 2 = 347 Hours Year 3 = 347 Hours Year 4 = 173 Hours

Minimum off-the-job training hours = 904 training hours
Knowledge - City & Guilds Level 3 Diploma in Engineering (QCF) (480 training hours) plus 424 additional training hours for Key Skills at the same level as Essential Skills Wales, Wider Key Skills, ERR and Mentoring

Minimum on-the-job training hours = 310 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF)

Minimum credit value = 186 credits

Pathway with maximum total learning hours = 1499 training hours
• Competence = 310 hours/ 105 credits
• Knowledge = maximum 720 hours (based on the largest technical certificate training hours)
• Knowledge = maximum 120 credits (based on the largest technical certificate credit)
• **Essential Skills Wales (notional value 60 hours x 3) = 180 hours /18 credits** or Key skills at the same level 135 hrs /15 credits
• Wider Key Skills = 120 hours / 2 x 6 = 12 credits
• Mentoring 154 weeks x 1 hour/week = 154 hours
• ERR = 15 minimum hours
Year 1 = 428 Hours Year 2 = 428 Hours Year 3 = 428 Hours Year 4 = 215 Hours

Maximum off-the-job training hours = 1189 training hours
Knowledge - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF) (720 training hours) plus 469 additional training hours for Essential Skills Wales, Wider Key Skills, ERR and Mentoring

Maximum on-the-job training hours = 310 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF)

Maximum credit value = 255 credits

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

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Casting Technician (semi finished metal products)	Casting of semi-finished ferrous and non ferrous alloy feedstock such as slabs, blooms or billets.
Casting Technician (formed metal products)	Casting of finished ferrous or non ferrous metal alloys to produce metal formed products.
Materials Scheduler	Working in both office and on the shop floor to ensure materials are in the correct place at the right time and of the right quality to meet the requirements of either metals production or manufacturing processes.
Metal Products Technician	Planning metal forming operations by applying physical pressure to change the shape of either hot or cold metal materials by rolling, drawing, sizing, shaping, forging or extrusion
Process Technician (metal wire and wire products)	Planning and controlling metal drawing operations by applying physical pressure to change the shape of metal feedstock into wire and wire products by die cold drawing.
Forgemaster Technician	Located in the forging shop, involving the forging, shaping, and heat treatment of billet stock to achieve the appropriate shape and properties prior to machining and further mechanical operations.
Heat Treatment Technician	Develop, prepare and supervise heat treatment procedures such as hardening, carburising, tempering, annealing and normalising for ferrous and non ferrous alloys in order to assist with metal processing activities.
Team Leader (metals processing)	Organising the efficient working of production teams by an informed approach to the techniques and procedures required.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/8238/0	EAL	132	433	

C2 - Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/8095/4	EAL	105	310	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - City & Guilds Level 3 Diploma in Engineering (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	600/0882/9	City & Guilds	54	480	

K3 - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/7319/9	Edexcel	120	720	

K4 - EAL Level 3 Diploma in Casting Technology (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	600/1025/3	EAL	78	600	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

*Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF) - is for use by 25yrs+ only (see below)

K1a - K4a provide underpinning knowledge for C1a and C2a.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the metal processing sector, including a broad range of mathematical, scientific, and engineering manufacturing principles and processes.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Advanced Apprentices must complete the Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations (QCF). However if the relevant QCF PEO units have already been achieved and certificated in a previous programme, such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway), then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum GLH requirements for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

***Note:** The Level 3 NVQ Diploma in Metal Processing and Allied Operations (QCF) may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to work area/environment that they will be working and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to: Ian Carnell, Frameworks Manager, 14 Upton Road,

Watford, Herts, WD18 0JT or icarnell@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	2	6

Progression routes into and from this pathway

Progression routes into the pathway include those who:

- have GCSEs in English, Maths and Science - grade C or above
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects
- are keen and motivated to work in the metal processing and allied operations industry
- have completed Foundation Apprenticeship in Metal Processing and Allied Operations at Level 2
- have completed a Pathways to Apprenticeship programme
- are willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- have previous work experience or employment in the engineering or manufacturing sector
- have completed a 14 to 19 Diploma in Engineering or Manufacturing
- have completed a Young Apprenticeship in Engineering or other related area
- have a Welsh Baccalaureate.

Progression from this pathway for those who complete a Metal Processing and Allied Operations - Metal Processing Apprenticeship:

While significant numbers of Apprentices will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering at Level 4; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

For more information on engineering progression routes we recommend you visit the careers

page and progression map at the Semta website hot-linked below:

semta.org.uk/individuals/p rogression-routes/

and the progression map

http://sem ta.org.uk/store/files/Routeimage4Jan2010_UpdatedLinks.pdf

UCAS points for this pathway:

(no information)

Employee rights and responsibilities

The nine national outcomes for Employment Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.

2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.

3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.

4. The role played by their occupation in their organisation and industry.

5. Has an informed view of the types of career pathways that are open to them.

6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.

7. Where and how to get information and advice on their industry, occupation, training and career.

8. Can describe and work within their organisation's principles and codes of practice.

9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

There are two methods of achieving ERR as set out below:

Method 1 - Qualifications

1a. EAL have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements.

Qualification details:
EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)
QCF qualification ref no: 600/0290/6
Credit value: 5 credits
Guided learning hours: 41

1b. Edexcel have produced a stand-alone qualification that can cover all 9 outcomes of ERR

requirements if Unit 2 is achieved.

Qualification details:
Edexcel BTEC Level 2 Award in WorkSkills for Effective Learning and Employment (QCF)
QCF qualification ref no: 501/1793/2
Credit value: 4 credits
Guided learning hours: 40

Please note: The Edexcel BTEC Level 2 Award consists of a mandatory unit as an introduction to apprenticeships. Apprentices must then complete Unit 2 which covers the ERR requirements (included within content). This qualification is designed to be assessed in the context of the sector relevant to the apprenticeship framework being undertaken (i.e. manufacturing/engineering in this case).

1c. Edexcel have produced a Level 3 stand-alone qualification that can cover all 9 outcomes of ERR requirements if Units 2 and 4 are achieved.
Qualification details:
Edexcel BTEC Level 3 Award in WorkSkills for Effective Learning and Employment (QCF)
QCF qualification ref no: 501/1791/9
Credit value: 4 credits
Guided learning hours: 40

The Edexcel BTEC Level 3 Award consists of a mandatory unit as an introduction to apprenticeships. Apprentices must then complete Units 2 and 4 which cover the ERR requirements (included within content). This qualification is designed to be assessed in the context of the sector relevant to the apprenticeship framework being undertaken (ie manufacturing/engineering in this case).

Please note: Only Level 2 is required to meet the framework requirements.

1d. City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:
City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work (QCF)
QCF qualification ref no: 600/2819/1
Credit value: 2 credits
Guided learning hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 Guided learning hours (GLH), Semta recommend a minimum of 40 GLH are taken to complete the ERR requirements.

These qualifications will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are

constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualifications will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from: customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

At present, a paper based system is used in Wales to claim final certification of the apprenticeship framework. However, this will soon be changed to an electronic based system. However in both cases one of the following forms of ERR evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

or

A qualification certificate for Edexcel BTEC Level 2 Award in WorkSkills for Effective Learning and Employment (QCF) **which must include achievement of Unit 2**

or

A qualification certificate for Edexcel BTEC Level 3 Award in WorkSkills for Effective Learning and Employment (QCF) **which must include achievement of Units 2 and 4**

or

A qualification certificate for City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work (QCF)

or

A completed and countersigned Semta ERR workbook

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

Semta recognises the training and business benefits of having apprentices from a wide variety of diverse backgrounds. We are committed to ensuring equality and diversity drives all aspects of apprentice selection and recruitment. Equal opportunity and diversity refers to the active elimination of unlawful or unfair discrimination against any person or group on the grounds of gender, race, colour, nationality, ethnic origin, religion, age, sexual orientation, marriage and civil partnership, pregnancy and maternity, political belief, disability and where appropriate, prison/offender background where this is deemed irrelevant.

Despite the encouraging numbers of both female participants and ethnic minorities on the 14 to 19 Engineering and Manufacturing Diplomas and Young Apprenticeship programmes, the Engineering sector still has a significant way to go to encourage women into engineering and manufacturing careers. Semta wishes to make a Gender Equality Commitment. Semta has signed the United Kingdom Resource Centre (UKRC) CEO's charter in a bid to step up female recruitment in its key sectors and programmes. Due to impending skills gaps it is estimated that 187,000 people will be required to be recruited and trained between 2010-2016 within Semta's sectors of aerospace, automotive, bioscience, composites, electrical, electronics, maintenance, marine, mathematics, metals and engineered metal products, renewables and science.

The UKRC is the Government's leading body for advanced gender equality in science, engineering and technology (SET) and the CEO's charter is a formal commitment to the UKRC's agenda to challenge the under-representation of women in SET. Women make up 50% of the labour market, yet they make up less than 20% of the labour market in science, engineering and technology.

The UKRC believes that only a concerted effort by the SET industry will break down the gender barriers that exist in traditionally male-dominated environments and we want to be part of a new consensus which will create an inclusive working environment for women. The manufacturing industries in which this framework operates are traditionally dominated by a white, male workforce. However, faced with an aging workforce and the probability of skill shortages we must look to attract new entrants from a much more diverse recruitment pool. This means that all young people and adults considering engineering and manufacturing as a career are welcome.

Providers of apprenticeship training including employers must be able to demonstrate there are no overt or covert discriminatory practices in the selection and employment of apprentices this can be demonstrated by the implementing of a Single Equality Scheme (SES). The new Equality Duty (part of the Single Equality Bill) introduced to the public sector requires all public sector bodies to produce a SES combining their current race, disability and gender schemes and should be recognised by all providers of apprenticeship training. The implementation of a SES demonstrates the organisation's commitment to equality and diversity by identifying new and improved ways of working to ensure the organisation is more efficient and effective in meeting the diverse needs of both staff and customers. All those who recruit apprentices, be they colleges, training providers or employers, must comply with the Equality act of 2010 and apply the Equality and Diversity legislation taking full account of the following:

- The Sex Discrimination Act 1975 and Code of Practice
- The Race Relations Act 1976 and Code of Practice
- The Disability Discrimination Act 1995 and Code of Practice
- Employment Equality (Religion or Belief) Regulations 2003
- Employment Equality (Sexual Orientation) Regulations 2003
- Employment Equality (Age) Regulations 2006
- The Equality Act 2010

Providers of apprenticeship training and employers must also actively monitor equality of opportunity and diversity procedures and take positive action where necessary to ensure equal access and treatment for all. Apprenticeships must be seen as a vital route to encourage and facilitate long term change in the equality and diversity of the engineering industry, therefore entry conditions into this framework are extremely flexible. All effort should be made to increase the diversity of our apprentice population.

On and off the job training (Wales)

Summary of on- and off-the-job training

For the Foundation Apprenticeship, the hours outlined in the sections that follow may vary depending on previous experience and attainment of the apprentice. Where a learner enters an apprenticeship agreement having previously attained or acquired some or all of the appropriate competence or knowledge, this prior learning needs to be recognised and documented using the relevant QCF credit transfer, QCF exemption or Recognition of Prior Learning (RPL) procedures.

The amount of 'on-the-job' training required to complete the apprenticeship under the apprenticeship agreement may then be reduced accordingly, provided the total numbers of 'on-the-job' hours for this framework can be verified for apprenticeship certification. Those apprentices who commence training under a new apprenticeship agreement with a new employer may bring a range of prior experience with them. When an apprentice can claim 5% or more hours towards the 'on-the-job' framework total through prior learning acquired from previous full-time education, employment or other vocational programme, then the apprentice's learning programme should include 'customisation'.

Training providers and colleges are encouraged to identify additional 'on-the-job' training programmes that customise the learning to the new workplace. Customisation programmes may include selecting appropriate additional Unit(s) from QCF qualifications, or relevant units recognised as Quality Assured Lifelong Learning [QALL] through a CQFW recognised body, or follow Essential Skills at a level higher than that specified in the framework, including one or more Wider Key Skills or other competency-based qualifications/units relevant to the workplace.

Note
This Metal Processing and Allied Operations framework primarily addresses the training needs of apprentices involved in a metal processing and manufacturing environment. Having discussed the requirement for Essential Skills Wales, it was felt that all three qualifications would be required. For an apprentice who has already achieved the relevant qualification, they must have been certificated within 5 years from the date of application for the Apprenticeship Certificate.

Any off-the-job training undertaken before the apprentice started may count towards the off-the-job training required for the apprenticeship if it was undertaken in relation to an accredited qualification contained in the framework for which an apprenticeship certificate is applied for. Both on and off-the-job training hours need to be planned, reviewed and jointly evaluated between the apprentice, training instructor, tutor or lecturer and workplace supervisor and where relevant the apprentice's mentor. The apprentice should have access to training support at all times whether on or off-the job training.

On and off-the job training hours should be delivered through a variety of learning methods, individual and group teaching; team-working; e-learning; distance learning; coaching; mentoring; feedback and assessment.

The minimum and maximum training hours and credit value for each pathway are summarised in the pathway descriptions.

Evidence requirements for claiming an Apprenticeship Certificate

The Welsh Government still retains a paper based certification system (at the time of Issuing this framework). In order to claim an apprenticeship certificate training providers will need to:

- Complete a Registration Request form (downloadable from the Semta website)
- Complete a Certificate Request form (downloadable from the Semta website)

In addition the certificate request must include:

- the full name of the apprentice
- apprentice start date
- the title of the apprenticeship framework completed
- the level of the apprenticeship completed which must be expressed as either Foundation, Apprenticeship, or Higher
- the apprentice sector to which the apprenticeship framework relates
- the date the apprentice completed the apprenticeship framework
- evidence of completion of the competency qualification (Awarding Organisation Completion Certificate)
- evidence of completion of the technical knowledge-based qualification (Awarding Organisation Completion Certificate)
- evidence of completion of Transferable Skills: (Essential Skills Wales or Key Skills at the same level) as specified in the Transferable Skills section within this framework
- evidence of completion of the Wider Key Skills
- evidence of completion of Employer Rights and Responsibilities (ERR) as detailed in the ERR section of this framework

Applications should be made by post to the Semta Apprenticeship Certification department 14, Upton Road, Watford, WD18 0JT.

The Welsh Government have given their commitment to join England in moving to an on-line apprenticeship certification system currently being operated by the Alliance of Sector Skills Councils, so arrangements for certification of apprenticeship will change significantly.

Off-the-job training

The minimum and maximum off-the-job training hours for each pathway are summarised in the pathway descriptions.

How this requirement will be met

Off-the-job training needs to:

- be planned, reviewed and evaluated jointly between the apprentice and a tutor, teacher,mentor or manager
- allow the apprentice to have access to a tutor, teacher, mentor or manager as and when required
- be delivered during contracted working hours
- be delivered through one or more of the following methods: individual and group teaching, e-learning, distance learning, coaching; mentoring, feedback and assessment; collaborative/networked learning with peers, guided study and induction

The knowledge qualification, Essential Skills Wales and Employment Rights and Responsibilities will be formally delivered by the training provider/college staff in accordance with the awarding organisation's delivery and assessment guidance.

It is recommended that a mentor is appointed for each apprentice to review their progress on a regular basis. It is estimated that a mentor will have up to two hours per week contact time with each foundation apprentice. This activity will take place off-the-job but is inclusive within the off-the-job hours quoted in the previous section.

Apprentices aged 16 to 24yrs must complete the Level 3 NVQ Extended Diploma which includes a number of Performing Engineering Operations (PEO) Level 2 NVQ units. These units should be delivered and assessed in a sheltered and realistic environment and must be achieved before apprentices complete the Level 3 units in the Extended Diploma on the job in the workplace.

It is recognised that in some instances in the past, the PEO NVQ Level 2 has been delivered on a part-time day-release basis in a sheltered environment with the employer delivering the NVQ Level 3 in parallel for the balance of time each week. There are clear disadvantages to this approach:

1. The potential for trainees to work in hazardous environments commensurate with Level 3 activities without having received the Health and Safety tuition at Level 2 that would support this situation
2. The potential for the learner not to be trained in a progressive way developing competences and knowledge at Level 2 that progresses seamlessly to Level 3.

If providers and employers wish to continue delivery on this basis, they must ensure that:
a) All appropriate Health and Safety units are successfully completed at Level 2 prior to any delivery at Level 3 in the workplace
b) Any units at Level 3 delivered in the workplace must have been preceded by delivery at Level 2 in a sheltered environment.

The Technical Certificate may be delivered either by day or block release or a combination of the two at a local Training Provider or College of FE or delivered on the employers premises (away from the immediate pressures of the workplace). There may also be a need for self study according to the Training Providers, Colleges or Awarding Organisations arrangements.

Essential Skills Wales delivery methods may vary, however all methods should start with initial/early assessment of a learner's skills, personalised learning should be based on assessing performance to date in order to inform and shape the next step in learning for that individual or group of individuals. Essential Skills Wales are externally assessed and candidates need to be prepared in order to take the tests, again methods of preparation vary but the preferred method seems to be an intensive off-the-job coaching period where candidates are taught the techniques required to undertake previous test papers to become proficient.

Employment Rights and Responsibilities (ERR) will be delivered as per the guidance in the ERR section of this framework. It is important that all new apprentices receive a comprehensive induction programme on joining their company and that they are aware of the evidence opportunities this presents to complete significant areas of the ERR requirements.

All three key elements (along with Wider Key Skills Wales) will be delivered by a combination of group-based delivery and self-study. In addition there will be a company induction, and it is

recommended that a mentor should be appointed for each apprentice to review their progress on a regular weekly basis. All of these activities will take place off-the-job.

The Technical Certificate, Essential Skills Wales and Employment Rights and Responsibilities will be formally delivered by the training provider/college staff in accordance with the awarding organisation's delivery and assessment guidance.

Inclusion of Technical Certificates in the Apprenticeship Framework pathway
Working closely with a number of stakeholders including employers and awarding organisations, we have ensured that employers and apprentices have access to a range of technical certificates across a number of awarding organisations.

Whilst Awarding Organisation partners have ensured that each of the technical knowledge qualification in the pathway delivers, via a core and options approach, the minimum knowledge and understanding requirements for all the (job roles) selected in the appropriate NVQ. Employers have also demanded that they and apprentices have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in metal processing and manufacturing sectors including maths, scientific and engineering/manufacturing principles.

The different sizes (credit value and GLH) of the technical knowledge qualifications reflects the varying degree in the complexity, breadth and depth of the skills, knowledge, understanding and theoretical concepts required in the metal processing and manufacturing sectors.

The benefits of this approach for both the employer and apprentices is that they can select the most appropriate qualification that meets the business requirements but also recognises the potential progression opportunities both in company including access to further and higher education and the career aspirations and abilities of the apprentice.

The providers of the technical knowledge qualification in partnership with the apprentice and employer could take the following into account and/or undertake further diagnostic assessments to ensure that the apprentice is enrolled on the most appropriate technical qualification:

- The career aspirations of the apprentice
- The skill and knowledge requirements of the employer for the selected metal processing occupational area (job role). The employer may have recruited the apprentice based on a workforce planning tool including succession planning

- An assessment of the academic qualifications achieved by the apprentice prior to undertaking the Apprenticeship to determine if the apprentice will have the ability to achieve one of the more academically demanding technical knowledge qualifications
- The results of any psychometric tests that would ascertain whether the apprentice will be able to achieve one of the more academically demanding technical knowledge qualifications
- The preferred learning style of the apprentice including the various assessment methodologies used by the different Awarding Organisations
- Custom and practice within the Sector, including any legislation requirements
- Local and/or National Trade Union agreements

Evidence of Off-the-job hours/Off-the-job training must be formally recorded, either in a diary, workbook, portfolio or be verified by attendance records. This evidence needs to be checked and signed by the assessor and employer. The range of evidence requirements are as follows:

- Copy of Awarding Organisation certificates for Communication & Application of number (Essential Skills Wales) or Key skills at the same level as Essential Skills Wales
- Copy of Awarding Organisation certificates for the IOLP and WWO (Wider Key Skills Wales)
- Copy of the Awarding Organisation certificate for the ERR qualification or completed countersigned ERR workbook
- Copy of the Awarding Organisation certificate for the knowledge qualification

Previous experience

Where an applicant enters an apprenticeship agreement with previous work-related experience, this prior learning needs to be recognised (see QCF Guidance on Claiming Credit for further details). To count towards apprenticeship certification, previous experience must be recorded using the appropriate awarding organisation's CQFW 'Recognition of Prior Learning' (RPL) procedures and the hours recorded may then count towards the off-the-job hours required to complete the apprenticeship. For apprentices with prior uncertificated learning experience, the off-the-job learning must have been acquired within 5 years of application for the Apprenticeship Certificate.

On-the-job training

The minimum and maximum on-the-job training hours for each pathway are summarised in the pathway descriptions.

How this requirement will be met

The Level 3 Extended NVQ Diplomas and Level 3 NVQ Diploma included in this Apprenticeship must be delivered in accordance with the relevant Awarding Organisations delivery and assessment guidance, which includes the requirements set out in Semta's QCF NVQ Unit Assessment Strategies.

The QCF NVQ Unit Assessment Strategies for Engineering and Performing Engineering Operations can be downloaded from Semta's website using the following URL: http: //semta.org.uk/training-providers/training-providers-qualifications

Apprentices must complete the Level 3 NVQ Extended Diploma in Metal Processing and Allied Operations. However if the relevant QCF PEO units have already been achieved and certificated in a previous programme, such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway), then they will be able to accredit these against the requirements of the Level 3 Extended Diploma. In such circumstances this would result in the minimum GLH requirements for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

The Level 3 NVQ Extended Diplomas include a number of Performing Engineering Operations (PEO) Level 2 NVQ units. It is strongly recommended that the PEO units are delivered and assessed off the job in a sheltered and realistic work environment. This will ensure that Apprentices have attained a minimum and safe level of skills, knowledge and understanding in the occupational area prior to entering the workplace, thus minimising the risk of injury to themselves and other employees and the potential of increased costs incurred by the employer such as damaged tools/equipment, scrapped materials and components.

In order to ensure the safe transition to the workplace prior to being exposed to the hazards of the industrial environment, Apprentices must receive sufficient Health and Safety training covering both general and occupational specific requirements whilst undertaking the selected Level 2 NVQ PEO units off the job and in a sheltered and realistic work environment.

As a minimum the training programme should include the skills, knowledge and understanding requirements set out in the Performing Engineering Operations Level 2 (QCF).

Whilst undertaking the skill specific Level 2 QCF NVQ units as part of the Level 3 NVQ Extended Diploma, Training Providers may wish to consider registering Apprentices on the three Mandatory Units from the Level 2 NVQ Diploma in Performing Engineering Operations (QCF):

Unit 1: Working Safely in an Engineering Environment. QCF Unit Ref; L/600/5781
Unit 2: Carrying out Engineering Activities Efficiently and Effectively. QCF Unit Ref; D/600/5784
Unit 3: Using and Communicating Technical Information. QCF Unit Ref; M/600/5790

This has the advantage that if for any reason the apprentice is not able to complete the Level 3 NVQ Extended Diploma they would have achieved sufficient units to claim the Level 2 NVQ Diploma in Performing Engineering Operations (QCF).

All apprentices are required to generate evidence in the workplace to demonstrate completion of the competence qualification, this may be through:

- apprentices generating a portfolio to record evidence of unit completion in accordance with the Awarding Organisations requirements and this will be regularly reviewed by the assessor and mentor. A period of one hour per week has been set aside for mentors to review the ongoing progress of their apprentice

or

- apprentices generating portfolio evidence based on jobs undertaken will need to get this signed as having been completed by a responsible work colleague. This is then examined and agreed by the assessor as a contribution to demonstrating competence in the workplace.

Generation of portfolio evidence may be paper based, electronic with other mediums such as video evidence. Evidence may be gathered throughout the whole apprenticeship period.

It is also important that

- progress towards completion of the competence qualification should be planned, reviewed and evaluated jointly between the apprentice and an appointed mentor or manager
- apprentices should receive regular reviews from the mentor and assessor in order to ensure they remain on target to complete the competence qualification in the allocated time
- the qualification should be delivered during normal contracted working hours.

Examples of on-the-job guided learning in an engineering manufacturing context might be:

- Environmental awareness
- Employability skills
- Team working and communications
- Task specific workplace instructions or team briefings
- Taught sessions by the workplace line manager/instructor
- Induction where activities are covered within normal work duties
- Coaching of learners.

Wider key skills assessment and recognition (Wales)

Improving own learning and performance

Improving own learning and performance is an essential component of the Apprenticeship in Metal Processing and Allied Operations at level 3 and will remain so within the new SASW arrangements.
The requirement is at level 2.

Working with others

Working with others is an essential component of the Apprenticeship in Metal Processing and Allied Operations at level 3 and will remain so within the new SASW arrangements.
The requirement is at level 2.

Problem solving

Although the ability to problem solve is required in many engineering processes, it is dealt with 'on-the-job' within the NVQ and technical certificate rather than in the abstract. Therefore problem solving does not form a specific part of the Wider Key Skill requirements for this framework.

Additional employer requirements

There are no additional employer requirements.

apprenticeship
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