

apprenticeship FRAMEWORK

Operations and Quality Improvement (England)

IMPORTANT NOTIFICATION FOR ALL APPRENTICESHIP STARTS FROM 21 SEPTEMBER 2018

Modifications to SASE came into effect on 21 September 2018. Accordingly, SASE publication DFE-00236-2018 applies **both** to new Apprenticeship starts from 21 September 2018 **and** all Apprenticeships commenced before and not completed by 21 September 2018.

Latest framework version?

For any previous versions of this framework: https://acecerts.co.uk/framework_library

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SEMTA

Apprenticeship Certificates
England

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Operations and Quality Improvement

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Framework information

Information on the Issuing Authority for this framework:

SEMTA

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

Issue number: 6	This framework includes:
Framework ID: FR03680	Level 2 <input type="checkbox"/> Level 3 <input checked="" type="checkbox"/> Level 4-7 <input type="checkbox"/>
Date this framework is to be reviewed by: 31/12/2016	This framework is for use in: England

Short description

This Operations and Quality Improvement Advanced Apprenticeship framework has been produced in partnership with major employers and their supply chains to develop a pool of talent across the UK to support businesses to become more productive and remain competitive often in global markets. The framework components set out the skills, knowledge and understanding employees will require in order to support businesses to identify and then deliver continuous and sustainable quality, cost, delivery improvements for existing or new products, processes and/or services. Typical job roles could include Business Improvement Co-ordinators, Lean Manufacturing Facilitators, Production Team Leaders and Six Sigma Quality and Reliability Co-ordinators.

Contact information

Proposer of this framework

Semta has worked closely with its employers 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 this apprenticeship framework.

This framework has been produced in partnership with major employers, such as Jaguar Landrover, and their supply chains to develop a pool of talent across the UK to support businesses to become more productive and remain competitive often in global markets.

Developer of this framework

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Revising a framework

Why this framework is being revised

This framework is being revised to include:

- one additional Employee Rights and Responsibilities (ERR) qualification requested by an Awarding Organisation and employers.

Summary of changes made to this framework

Pathway 1: Business Improvement Techniques

- One new ERR qualification has been added

Qualifications removed

None

Qualifications added

Pathway 1: Business Improvement Techniques

- ERR - BIIAB Level 2 Award In Employee Rights and Responsibilities (QCF) 601/4607/2 (new)

Qualifications that have been extended

None

Purpose of this framework

Summary of the purpose of the framework

Advanced Apprenticeships are jobs with an accompanying skills development programme designed by employers in the sector. It allows the apprentice to gain technical knowledge and real practical experience, along with functional and personal skills, required for their immediate job and future career. These are acquired through a mix of learning in the workplace, formal off-the-job training and the opportunity to practice and embed new skills in a real work context. This broader mix differentiates the Apprenticeship experience from training delivered to meet narrowly focused job needs.

All apprentices commencing their Advanced Apprenticeship must have an Apprenticeship Agreement between the employer and apprentice. This can be used to reinforce the understanding of the requirements of the apprenticeship. On completion of the Apprenticeship the apprentice must be able to undertake the full range of duties, in the range of circumstances appropriate to the job, confidently and competently to the standard set by the industry.

Sector background

The long term profitability and therefore survival of Britain's manufacturing base is reliant on being able to manufacture high value added products more cost effectively and with greater quality and productivity than international competition.

Between 1998 to 2007 Gross Value Added productivity (GVA) per employee in the engineering sector saw a significant improvement from £35,100 to £51,500 per employee, an increase of 47%. Similar productivity improvements will be needed in the manufacturing sector to ensure we remain internationally competitive.

The Operations and Quality Improvement Advanced Apprenticeship provides employers with a coherent industry recognised programme based on proven tools and techniques that will improve business processes and the quality of products and/or services. It is designed to support employers by promoting a culture of effective team working whilst developing continuous improvement skills across the wider workforce.

Whilst the principle aims and objectives of the Operations and Quality Improvement Advanced Apprenticeship Framework is to develop a pool of talent across the UK to support manufacturing engineering organisations in the Semta footprint including their supply chains, it is recognised that this Framework could be relevant and suitable for other Sectors where it has been identified that businesses need to become more productive, efficient and competitive often in global markets.

Example demographic profile

There are 27,000 production and quality group/team leaders employed in manufacturing engineering technical occupations including metal working, machining, quality inspection, test and assembly.

- Work status - 98% of production and quality group/team leaders and supervisors are employed on a full time basis
- Age - 11% are aged 60 plus
- Disability - 13% have some sort of disability
- Ethnicity - 3% are from an ethnic minority

Apprenticeship demand

The importance of the Operations and Quality Improvement Framework to the sector can be seen by the strong growth in numbers taking B-IT NVQs at both level 2 and level 3. Over the last five years over 72,000 B-IT Level 2 qualifications and 5,000 Level 3 qualifications have been completed in the sector.

As an example only half of production and quality group/team leaders and supervisors in technical occupations in manufacturing engineering are qualified at NVQ Level 3 or above, so there is a market potential for approximately 13,750 already in work that could undertake the Operations and Quality Improvement Advanced Apprenticeship. In addition there would be natural wastage and retirements that would also provide a steady flow of new entrants.

Despite the recession, employers in the manufacturing engineering sectors above have a substantial demand for new recruits. For example in 2009, 8% of establishments in England had vacancies, 11,500 vacancies in total of which 2,700 were for technical occupations including production or quality group/team leader vacancies.

It is estimated that there were over 400 production or quality group/team leader vacancies across engineering manufacture in England in 2009 with 50+ classed as hard to fill vacancies. In addition, 2,600 production or quality group/team leader/supervisors (430) per annum will need to be recruited into technical occupations over the period 2011-2016 to replace those retiring in the sector. The Operations and Quality Improvement Advanced Apprenticeship framework would be a particularly relevant for these new entrants to undertake.

Aims and objectives of this framework (England)

The framework components set out the skills, knowledge and understanding employees will require in order to support the business to identify and then deliver continuous and sustainable quality, cost and delivery improvements for existing or new products, processes and/or services.

It aims to assist organisations to improve their business activities by applying proven tools and techniques of continuous improvement. This requires the organisation to focus its attention on identifying areas for improvement based on auditable and reliable data and information. The appropriate tools and techniques are then selected to reduce or eliminate all forms of waste, (which is defined as anything that does not add value for the customer), reduce variation, and defect prevention. The improvements must be measured and maintained through a continuous monitoring, review and evaluation cycle and lead to the development of standard operations.

By ensuring that all activities add value and are standardised, a robust production and quality system is created that:

- eliminates the risk of defective products or services reaching the customer
- reduces costs and
- improves profitability and competitiveness.

Further objectives are to:

- attract new people into the engineering/manufacturing sector from a diverse range of backgrounds to replace those who naturally leave the sector and those who will retire sometime in the next 5 years
- provide a structured training programme to develop and upskill the workforce
- provide a Business Improvement Techniques (B-IT) pathway to benefit organisations across all sectors where there is a need to review business processes in order to identify and eliminate waste and to improve quality
- improve overall operational performance through quality improvement
- help improve recruitment and retention rates within the industry by offering appropriate career progression
- improve productivity rates and thus profitability (GVA per employee)
- tackle the diversity issue within the sector, especially under representation of women.

Entry conditions for this framework

Employers wish to attract applicants that have an interest to work in an environment where it is business critical to continually improve the organisations products, processes or services in order to remain competitive, and welcome applicants from a diverse range of backgrounds and anticipate that they will have a wide range of experience, achievements and qualifications.

They have strongly recommended that they would be interested in candidates who have:

- previous work experience or employment in the relevant sector and/or occupation
- achieved an N/SVQ Level 2 and/or Level 3 or equivalent in a relevant sector/occupation

... Operations and Quality Improvement (England)

such as engineering, manufacturing or science

- completed an Intermediate Apprenticeship framework in the relevant sector such as Engineering Manufacture or Improving Operational Performance

Employers may also consider candidates who:

- are willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- are analytical and have an aptitude for finding solutions to problems
- enjoy working as part of a team
- have 5 GCSEs or equivalents including English, Maths, and Science (C) grade or above or
- have A Levels or equivalents in Maths, Science, business or other vocational subject relevant to the sector

The selection process on behalf of employers may include initial assessment where applicants will be asked if they have any qualifications or experience that can be accredited against the requirements of the apprenticeship. 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 and are motivated to become an apprentice, as undertaking an apprenticeship is a major commitment for both the individual and the employer.

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.

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 entrants on the current rules for accrediting prior learning (APL) and recognising prior experience. 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.

Transferable skills

An Advanced Apprenticeship framework specifies that an apprentice needs to achieve (or have achieved) acceptable qualifications at required minimum grades/levels. From 6th April 2015 the "5 year rule" has been removed so acceptable qualifications, achieved before September 2012, are now in scope. This includes GCSEs, iGCSEs, A and AS Levels, O Levels and Key Skills.

The minimum requirements are summarised in the preface to this framework and are reflected in the notes and grades/levels given in the Transferable Skills tables in each pathway.

Knowledge qualifications

If applicants already have one of the knowledge qualifications or individual QCF units at Level 3 (see knowledge qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of starting their apprenticeship. Furthermore the hours that were spent gaining the qualification may be counted towards the total hours for the apprenticeship.

Competence qualifications

If applicants already have one of the Level 3 Competence Qualifications (see competence qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of starting their apprenticeship. The hours that were spent gaining the competence qualification may be counted towards the total hours for the apprenticeship.

It is important however that there is agreement between the employer and the apprentice that the applicant is currently competent.

Prior experience in the sector

Applicants that are already working in the sector or who have recently worked in the sector at the appropriate level can apply to have their experience formally recognised by an Awarding Organisation and this could count towards the qualification(s) in this framework.

Level 3

Title for this framework at level 3

Operations and Quality Improvement

Pathways for the framework at level 3:

Pathway 1: Business-Improvement Techniques

Level 3, Pathway 1: Business-Improvement Techniques

Description of this pathway

Business-Improvement Techniques Level 3 - total minimum credit value = 149 credits.

- **Competence = 94 credits**
- **Knowledge = 40 credits**
- **Transferable Skills = 15 credits**

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

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Business improvement Co-ordinator, Continuous Improvement Facilitator, Continuous Improvement Champion, Change Implementation Facilitator	Achieve organisational Quality, Cost, Delivery & People objectives to support waste elimination, reduce non value added tasks, drive continuous improvement, solve problems & achieve permanent solutions, produce visual management systems to set out company quality, cost & delivery targets & progress
Business Analyst (Process Improvement), Lean Manufacturing Specialist, Industrial Engineer, Process Co-ordinator	Carrying out statistical & lead time analysis from order to delivery to the customer. Carrying out value stream mapping including producing a current and future state maps, applying failure modes & effects analysis so that potential failures can be eliminated out of the process or product
Cell Leader, Production Leader, Assembly Group Leader	Leading projects to identify areas of improvement, applying workplace organisation methodologies such as 5s/5c, reducing scrap / re-work, implementing TPM programmes, reviewing & maintaining SOP's. This is a pro-active role to coordinate & lead the activities of a work-group of, 5-10 team members
Quality Section Leader, Continuous Improvement Champion (Quality), Quality Improvement Engineer (Lean Manufacturing)	Undertake audits, produce & analyse data to benchmark the quality of goods received, processed & delivered against company or customer KPI's, using the data to identify root causes of quality issues, find solutions & implement continuous improvements. Review & maintain QA documentation
Six Sigma Specialist (new product development and Introduction), Six Sigma Quality and Reliability Co-ordinator	Part of a team to define the design based on customer demand, identify & measure characteristics critical to quality including product, production capabilities & identify potential risks. Contribute to product design & involved in the verification process by running production trails

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Diploma in Business-Improvement Techniques (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/0856/6	EAL	94	320	N/A
C1b	501/0600/4	City & Guilds	94	320	N/A
C1c	501/0584/X	Edexcel	94	320	N/A
C1d	501/0927/3	PAA\VQSET	94	320	N/A
C1e	601/3761/7	Future (Awards and Qualifications) Ltd	94	320	N/A
C1f	600/2733/2	ETC Awards Ltd	94	320	N/A
C1g	601/6607/1	BIIAB	94	320	N/A

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Business-Improvement Techniques (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	600/3559/6	EAL	40	170	N/A

K2 - FAQ Level 3 Diploma in Business-Improvement Techniques (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	601/3745/9	Future (Awards and Qualifications) Ltd	40	170	N/A

K3 - ETCAL Level 3 Diploma in Business-Improvement Techniques (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	601/6080/9	ETC Awards Ltd	40	170	N/A

K4 - BIIAB Level 3 Diploma in Business-Improvement Techniques (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	601/6603/4	BIIAB	40	170	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K4 provide underpinning knowledge for C1a - C1g

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in carrying out process or quality improvement activities safely and efficiently.

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.

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.

Transferable skills (England)

Apprentices must complete, or have completed, one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications in order to successfully complete their Apprenticeship.

The list of acceptable qualifications may vary depending on the Apprentice's completion date of their Apprenticeship. Please check the qualifications that are acceptable for each Apprentice.

If Apprentices do not have acceptable evidence of the achievement of these mandatory qualifications, at the required grade/level, an Apprenticeship certificate cannot be awarded.

ENGLISH

For the current list of acceptable English qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of [SASE](#) on the www.gov.uk website. Additional guidance materials can be found on the [Knowledge Base](#) section of the [ACE](#) website.

Does this framework require English achievement above the minimum SASE requirement?

YES

NO

If YES, please state the grade/level required for English:

Click here to enter text.

MATHS

For the current list of acceptable Maths qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of [SASE](#) on the www.gov.uk website. Additional guidance materials can be found on the [Knowledge Base](#) section of the [ACE](#) website.

Does this framework require Maths achievement above the minimum SASE requirement?

YES

NO

If YES, please state the grade/level required for Maths:

Click here to enter text.

Inclusion of Information and Communications Technology (ICT)

Is ICT a framework requirement? **YES** **NO**

ICT

For the current list of acceptable ICT qualifications and appropriate **minimum** grade/level requirements, please refer to the most recent version of [SASE](#) on the www.gov.uk website. Additional guidance materials can be found on the [Knowledge Base](#) section of the [ACE](#) website.

Does this framework require ICT achievement above the minimum SASE requirement

YES

If YES, please state the grade/level required for ICT:

Click here to enter text.

Progression routes into and from this pathway

Progression routes into this pathway

It is likely that there will be a mix of entrants into this pathway. Although some will be school leavers who have completed their GCSE studies and in some cases relevant vocational activity such as a Diploma in Manufacturing or other related activity, Pre-Apprenticeship programme or extended work experience - it is highly likely that older apprentices in the 18 to 24 age category and adults post 25 will also use this pathway, who have worked in a process driven context and are now considering an Advanced Apprenticeship. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

It is likely that Intermediate Apprentices who have completed Pathway 3 (B-IT 2) of the Improving Operational Performance framework will progress onto this framework.

More specifically they may:

- have GCSEs in English, Maths, and Science (C) grade or above or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed an Intermediate Apprenticeship such as the Engineering Manufacture or Improving Operational Performance Apprenticeship or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace or
- have previous work experience or employment in the sector or occupation or
- have completed a 14 to 19 Diploma in a related discipline such as the Engineering or Manufacturing Diploma or
- have completed a Young Apprenticeship in Engineering or other related sector
- have a Welsh BaccaLaureate (Welsh applicants) or
- be keen and motivated to work in the selected sector and working environment.

This pathway would particularly suitable for those people who are good at problem solving and enjoy organising activities.

Progression routes from the framework

The purpose of this framework is to enable employees to make a contribution to the overall improvement of the business. The components included in the Operations and Quality Improvement will ensure that employees can continuously improve processes and procedures as identifying and eliminating waste, creating an efficient flow of a process and improving

quality leading to greater efficiency and increased profitability.

While significant numbers of Advanced Apprentices will seek internal progression within their companies, some will want to progress to a Higher Apprenticeship such as the Higher Apprenticeship in Advanced Manufacturing Engineering while 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 websites hot-linked below.

<http://semta.org.uk/careers/apprenticeships>

<https://nationalcareersservice.direct.gov.uk/advice/planning/jobfamily/Pages/manufactureandengineering.aspx>

<http://www.apprenticeships.org.uk/>

Employee rights and responsibilities

There are two methods of achieving ERR as specified 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. Pearson have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements if Unit 2 is achieved.

Qualification details:

Pearson 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 Pearson 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 (ie manufacturing/ engineering in this case).

1c. Pearson 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:

Pearson 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 Pearson 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

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

Qualification details:

BIIAB Level 2 Award in Employment Rights and Responsibilities (QCF)

QCF qualification ref no: 601/4607/2

Credit value: 2 credits

Guided learning hours: 16

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 England.

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.

To claim final certification of the apprenticeship, one of the preceding forms of ERR evidence will be required, together with the Apprentice Declaration and Authorisation form V3 signed by the apprentice prior to 1st July 2015 or the Consent form, which are available from the Federation for Industry Sector Skills and Standards (Fisss) website: acecerts.co.uk/

Certification Requirements for ERR

All providers and apprentices must complete the Apprenticeship Consent Form when claiming for the Apprentice's apprenticeship certificate. The universal form covers declarations for the apprentice to:

- confirm the existence of an Apprenticeship Agreement between themselves and their employer;
- confirm their achievement of all ERR requirements;
- confirm their achievement of all 6 PLTS;
- confirm that they have received at least the minimum levels of GLH set out in their framework and have undertaken training both on and off the job.

All apprentices must sign this form at the end of programme to give their authority for the claimant, named on the form, to make a claim, on their behalf, for their Apprenticeship completion certificate.

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.

Download the guidance on the Equality Act here:

www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/

On and off the job guided learning (England)

Total GLH for each pathway

Evidence requirements for claiming an Apprenticeship Certificate

The Apprenticeships, Skills, Children and Learning Act (ASCL) was enacted in November 2010 and the new certification requirements came into force on the 13th April 2011. One of the key requirements of the Act is that only the Certifying Authority for England can issue apprenticeship certificates to successful apprentices in England.

In order to make this happen the Federation for Industry Sector Skills & Standards (Fisss) has been designated the Certifying Authority in England. Certification applications are made through the Apprenticeship Certificates England (ACE) on-line system.

Guided Learning Hours

Semta recognises that all apprentices have different learning needs and some apprentices will require more Guided Learning Hours (GLH) while others will require less. We have outlined the GLH delivered to apprentices as set out in the GLH in the individual qualifications. This represents a typical apprentice with minimum experience in the sector, as specified by the Specification for Apprenticeship Standards for England (SASE).

Both on and off-the-job GLH must be clearly evidenced. This SASE requirement for on-the-job and off-the-job guided learning is intended to meet the requirement in section 27(2) (b) of the Apprenticeships, Skills, Children & Learning (ASCL) Act for on-the-job and off-the-job training.

Total GLH for each pathway is summarised below

Advanced Apprenticeship (Level 3) - Business-Improvement Techniques

Pathway 1: Business-Improvement Techniques

Pathway duration approximately 18 months depending on the qualification and unit options selected

Total minimum credit value: 149 credits

Total GLH = 746 hours

- Competence = 320 minimum hours /94 minimum credits

- Knowledge = 170 minimum hours (based on the smallest technical certificate GLH)
- Knowledge = 40 minimum credits (based on the smallest technical certificate credit)
- Functional Skills (notional value 45 hours x 3) =135 hours / 15 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours
- PLTS = 40 minimum hours
- ERR = 15 minimum hours

Year 1 = 497 hours Year 2 = 249 hours

Minimum off-the-job guided learning hours

Below are the minimum off-the-job guided learning hours for this framework

Pathway 1: Business-Improvement Techniques

Minimum off-the-job hours through pathway 1 is 426 GLH, and is evidenced by completion of the knowledge element, Functional skills, Employee Rights and Responsibilities (ERR), PLTS and Mentoring.

This amounts to 57% of the total pathway GLH.

How this requirement will be met

Off-the-job learning needs to:

- achieve clear and specific outcomes which contribute directly to the successful achievement of the framework and this may include accredited and non-accredited elements of the framework
- be planned, reviewed and evaluated jointly between the apprentice and a tutor, teacher, mentor or manager
- allow the apprentice access as, and when required to tutors, teachers, mentor(s) or manager
- be delivered through one or more of the following methods: individual and group tutoring, e-learning, distance learning, coaching, mentoring, feedback and assessment, collaborative/networked learning with peers or directed study.

Providers will not be required to record individual on and off-the-job Guided Learning Hours (GLH). However for certification purposes, the provider will be required to declare that the apprentice has completed the on and off-the-job GLH requirement as set out in this Apprenticeship framework.

GLH delivered under an apprenticeship agreement may vary depending on the previous experience and attainment of the apprentice. The amount of off-the-job training required to complete the apprenticeship under the apprenticeship agreement may then be reduced accordingly, provided the total number of off-the-job hours for this framework can be verified for apprenticeship certification.

Apprentices following the pathway described within this framework will receive off-the-job learning via a combination of activities such as the Underpinning Knowledge (Technical certificate), Functional skills, Employee Rights and Responsibilities (ERR) and Personal Learning and Thinking Skills (PLTS). 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.

Functional skills delivery methods may vary, however all methods should start with initial/early assessment of a learner's functional 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. Functional skills 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.

Employee 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 will be delivered by a combination of group-based delivery and self-study. These in combination exceed the 100 GLH / 30% rule as defined in the SASE (19. Section 27-1 SASE). In addition there will be a company induction, group delivery of PLTS requirements (prior to each apprentice starting to record their PLTS) 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, Functional skills, and ERR will be formally delivered by the training provider/college staff in accordance with the awarding organisation's delivery and assessment guidance. This process is regulated and quality assured by Ofqual and Ofsted. PLTS will be delivered as described within its section.

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 knowledge qualifications that specify varying degrees of theoretical concepts required in the manufacturing sectors.

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 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 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 Advanced Apprenticeship to determine if the apprentice will have the ability to achieve one of the more academically demanding 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 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

Minimum on-the-job guided learning hours

The minimum on-the-job guided learning hours specified for Advanced Apprenticeship - Operations and Quality Improvement:

Pathway 1: Business-Improvement Techniques

Minimum on-the-job through pathway 1 is 320 GLH and is evidenced by completion of the Level 3 NVQ Diploma in Business-Improvement Techniques (QCF)

How this requirement will be met

On-the-job delivery

Assessment of the units in the competency qualification included in this Advanced Apprenticeship must be delivered in accordance with the relevant Awarding Organisations delivery and assessment guidance, and carried out in line with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Semta's website.

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's B-IT NVQ QCF unit assessment strategy which can also be downloaded from Semta's website at

[http://semta.org.uk/pdf/Business-Improvement-Techniques-\(B-IT\)-NVQ-Level-2-3 -and-4.pdf](http://semta.org.uk/pdf/Business-Improvement-Techniques-(B-IT)-NVQ-Level-2-3 -and-4.pdf)

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 Organisation's 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 apprenticeship is delivered during normal contracted working hours.

Examples of on-the-job guided learning in an engineering/manufacturing or process/quality improvement 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.

Training providers or colleges should also keep detailed records performance reviews, mentoring, assessment of competence, the building of portfolios, keeping diaries/logs, peer review discussions.

Certification Requirements for GLH

All providers and apprentices must complete the Apprenticeship Consent Form when claiming for the apprentice's Apprenticeship certificate. The universal form covers declarations for the apprentice to:

- confirm the existence of an Apprenticeship Agreement between themselves and their employer;
- confirm their achievement of all ERR requirements;
- confirm their achievement of all 6 PLTS;
- confirm that they have received at least the minimum levels of GLH set out in their framework and have undertaken training both on and off the job.

All apprentices must sign this form at the end of programme to give their authority for the claimant, named on the form, to make a claim, on their behalf, for their Apprenticeship completion certificate.

Personal learning and thinking skills assessment and recognition (England)

Summary of Personal Learning and Thinking Skills

Personal Learning and Thinking Skills (PLTS) comprise of six skill areas that are essential to being successful in an apprenticeship.

There are two methods of evidencing the completion of PLTS within this framework.

Method 1 - Qualifications

1a. EAL have produced a stand-alone qualification that covers all 6 skill areas of PLTS.

Qualification details:

EAL Level 2 Award in Personal Learning and Thinking Skills for New Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/2019/2

Credit value: 6 credits

Guided learning hours: 60

1b. Pearson have produced a stand-alone qualification that can cover all 6 skill areas of PLTS if Units 7, 8 and 9 are achieved

Qualification details:

Pearson 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 Pearson BTEC level 2 Award qualification consists of a mandatory unit as an introduction to apprenticeships. Apprentices **must then complete Units 7, 8 and 9** to cover all the PLTS which are mapped in grids at the end of each unit. 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).

1c. Pearson have produced a Level 3 stand-alone qualification that can cover all 6 skill areas if Units 5, 6 and 7 are achieved.

Qualification details:

Pearson 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 Pearson BTEC Level 3 Award consists of a mandatory unit as an introduction to apprenticeships. Apprentices **must then complete Units 5, 6 and 7** to cover all the PLTS which are mapped in grids at the end of each unit. 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.

Method 2 - Workbook

Apprentices or training providers may download the Semta PLTS Evidence Recording Document available from the Semta website: <http://semta.org.uk/>

This document will be used to record the apprentices PLTS evidence from the most naturally occurring location, such as the knowledge or competency qualifications, or Functional skills and ERR components of the framework.

To claim final certification of the apprenticeship, one of the following forms of PLTS completion evidence will be required:

a qualification certificate for the EAL Level 2 Award in Personal Learning and Thinking Skills 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 Units 7, 8 and 9**

or

- a qualification certificate for Edexcel BTEC Level 3 Award in WorkSkills for Effective Learning and Employment (QCF) **which must include achievement of Units 5, 6 and 7**

or

- a completed and countersigned Semta PLTS evidence recording document

All apprentices will need to receive guidance on what PLTS are and how they will need to provide evidence for all 6 PLTS areas as detailed below. They will need to understand those aspects of each skill area as defined in the bullet points below and be able to identify opportunities to practice and evidence these skills within their apprenticeship.

The PLTS areas are interconnected so it is likely that apprentices will encounter skills from several areas in any one learning experience. For example, when an apprentice works to improve their own and team practice in the workplace they will have demonstrated team worker (collaborate with others to work towards common goals), effective participator (identify improvements that would benefit others as well as themselves) and self manager skills (work towards goals, showing initiative, commitment and perseverance).

Lecturers and/or assessors will be expected to check individual apprentices' progress in using and recording PLTS.

Certification Requirements for PLTS

All providers and apprentices must complete the Apprenticeship Consent Form when claiming for the apprentice's Apprenticeship certificate. The universal form covers declarations for the apprentice to:

- confirm the existence of an Apprenticeship Agreement between themselves and their employer;
- confirm their achievement of all ERR requirements;
- confirm their achievement of all 6 PLTS;
- confirm that they have received at least the minimum levels of GLH set out in their framework and have undertaken training both on and off the job.

All apprentices must sign this form at the end of programme to give their authority for the claimant, named on the form, to make a claim, on their behalf, for their Apprenticeship completion certificate.

Creative thinking

People think creatively by generating and exploring ideas, making original connections. They try different ways to tackle a problem, working with others to find imaginative solutions and outcomes that are of value.

To demonstrate these skills, behaviours and personal qualities, apprentices should:

- Generate ideas and explore possibilities;
- Ask questions to extend their thinking;
- Connect their own and others' ideas and experiences in inventive ways; Question their own and others' assumptions;
- Try out alternatives or new solutions and follow ideas through; Adapt ideas as circumstances change.

Independent enquiry

People process and evaluate information in their investigations, planning what to do and how to go about it. They take informed and well-reasoned decisions, recognising that others have different beliefs and attitudes.

Skills, behaviours and personal qualities for apprentices:

- Identify questions to answer and problems to resolve;
- Plan and carry out research, appreciating the consequences of decisions; Explore issues, events or problems from different perspectives;
- Analyse and evaluate information, judging its relevance and value;
- Consider the influence of circumstances, beliefs and feelings on decisions and events; Support conclusions, using reasoned arguments and evidence.

Reflective learning

People evaluate their strengths and limitations, setting themselves realistic goals with criteria for success. They monitor their own performance and progress, inviting feedback from others and making changes to further their learning.

To demonstrate these skills, behaviours and personal qualities, apprentices should:

- Assess themselves and others, identifying opportunities and achievements;
- Set goals with success criteria for their development and work;
- Review progress, acting on the outcomes;
- Invite feedback and deal positively with praise, setbacks and criticism; Evaluate experiences and learning to inform future progress;
- Communicate their learning in relevant ways for different audiences.

Team working

People work confidently with others, adapting to different contexts and taking responsibility for their own part. They listen to and take account of different views. They form collaborative relationships, resolving issues to reach agreed outcomes.

To demonstrate these skills, behaviours and personal qualities, apprentices should:

- Collaborate with others to work towards common goals;
- Reach agreements, managing discussions to achieve results;
- Adapt behaviour to suit different roles and situations, including leadership roles; Show fairness and consideration to others;
- Take responsibility, showing confidence in themselves and their contribution;
- Provide constructive support and feedback to others.

Self management

People organise themselves, showing personal responsibility, initiative, creativity and enterprise with a commitment to learning and self-improvement. They actively embrace change, responding positively to new priorities, coping with challenges and looking for opportunities.

To demonstrate these skills, behaviours and personal qualities, apprentices should:

- Seek out challenges or new responsibilities and show flexibility when priorities change;
- Work towards goals, showing initiative, commitment and perseverance;
- Organise time and resources, prioritising actions;
- Anticipate, take and manage risks;
- Deal with competing pressures, including personal and work-related demands;
- Respond positively to change, seeking advice and support when needed;
- Manage their emotions, and build and maintain relationships.

Effective participation

People actively engage with issues that affect them and those around them. They play a full part in the life of their school, college, workplace or wider community by taking responsible action to bring improvements for others as well as themselves.

To demonstrate these skills, behaviours and personal qualities, apprentices should:

- Discuss issues of concern, seeking resolution where needed;
- Present a persuasive case for action;
- Propose practical ways forward, breaking these down into manageable steps;
- Identify improvements that would benefit others as well as themselves;
- Try to influence others, negotiating and balancing diverse views to reach workable solutions;
- Act as an advocate for views and beliefs that may differ from their own.

apprenticeship **FRAMEWORK**

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