Pearson
BTEC

Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence)

Specification

Apprenticeship Standards – Competence Qualification (England only)

First registration October 2021

Issue 2

About Pearson

We are the world's leading learning company operating in countries all around the world. We provide content, assessment and digital services to schools, colleges and universities, as well as professional and vocational education to learners to help increase their skills and lifelong employability prospects. We believe that wherever learning flourishes so do people.

This specification is Issue 2. Key changes are summarised on the next page. We will inform centres of any changes to this issue. The latest issue can be found on our website.

References to third-party material made in this specification are made in good faith. Pearson does not endorse, approve or accept responsibility for the content of materials, which may be subject to change, or any opinions expressed therein. (Material may include textbooks, journals, magazines and other publications and websites.)

All information in this specification is correct at time of publication.

Publication code: VQ000161

Summary of changes to Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence) specification Issue 2

Summary of changes made between previous issue and this issue	Page number
Units 175 and 176 have been added to the qualification structure for Pathway 4	Page 13

If you need further information on these changes or what they mean, contact us via our website at: qualifications.pearson.com/en/support/contact-us.html.

Contents

1 Introducing the qualification

What are Pearson competence-based qualifications?

Pearson competence-based qualifications are work-based qualifications that give apprentices the opportunity to develop and demonstrate their competence in the area of work or job role to which the qualification relates.

Apprentices will develop the knowledge, skills and behaviours to become competent in the area of work or job role. The requirements to be competent are set by apprenticeship standards for the appropriate sector. Pearson has worked closely with the appropriate Trailblazer group/professional body/employers in the development of this qualification. The qualifications are written in broad terms to enable employers and providers to apply them to a wide range of related occupational areas.

Qualification purpose

The Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence) is for apprentices employed as Advanced Manufacturing Engineering (AME) apprentices.

Role-specific occupational requirements

The occupational roles covered in this qualification through the available pathways include:

1. Mechatronics Technician
2. Product Design and Development Technician
3. Machining (Conventional Machining)
4. Machining (CNC Machining)
5. Machining (Spring Making)
6. Toolmaker, Tool and Die Maintenance Technician (Toolmaker)
7. Toolmaker, Tool and Die Maintenance Technician (Mould, Tool and Die Equipment)
8. Technical Support Technician (Operational Technical Support)

Typically, the work would cover a broad range of activities, including making a technical contribution to either the design, development, quality assurance, manufacture, installation, commissioning, decommissioning, operation or maintenance of products, equipment, systems, processes or services. This requires the application of a complex blend of skills, knowledge and occupational behaviours across the mechanical, electrical, electronic, electromechanical and fluid power components/systems disciplines.

The qualification is suitable for apprentices to:

- develop the fundamental technical skills and underpinning knowledge and understanding required to become competent in the job role. For details of the pathways and units included in this qualification, please see *Section 3 Qualification structure*
- gain recognition for existing skills and knowledge
- develop appropriate professional attitudes and behaviours that will support personal success in their job role and the long-term success of their organisation
- develop a range of interpersonal and intrapersonal skills to support progression to, and success in, further study and career advancement
- achieve a nationally-recognised Level 3 qualification.

The units in the qualification are based on the Employer Units of Competence (EUCs) that set out the skills, technical knowledge and understanding, and the behaviours needed in employment in the roles within advanced manufacturing engineering.

Industry support and recognition

The Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence) was developed through close collaboration with the Engineering Technician Trailblazer employer group, employers, professional bodies and other awarding organisations.

This qualification is supported by:

- the AME Apprenticeship Employer Group, which includes: BMW Group UK, Make UK, Ford, GTA England, Jaguar Land Rover, NFEC, Aston Martin, Toyota, Nissan, GTA England, GM Vauxhall
- the Institution of Engineering and Technology (IET) – professional society for the engineering and technology community
- the Institution of Mechanical Engineers (IMechE) – professional engineering institution (the apprentice may choose to seek professional body registration in the form of EngTech accreditation. The AME Apprenticeship Employer Group has worked closely with IMechE on the design of the assessment, which will give an apprentice everything they need for EngTec
- Enginuity (Sector Skills Council – formerly SEMTA).

Funding

Qualifications eligible and funded for post-16-year-olds can be found on the funding Hub.

The apprenticeship funding rules can be found at www.gov.uk.

For further information on the requirements for delivery and assessment of the Apprenticeship Standards, please refer to the apprenticeship funding rules for employers at: https://www.gov.uk/guidance/apprenticeship-funding-rules-for-employers.

Relationship with previous qualifications

This qualification supersedes 601/9067/X Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Mechatronics Technician) (Development Competence) which has expired.

2 Qualification summary and key information

Qualification title	Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence)
Qualification Number (QN)	603/7916/9
Regulation start date	21/09/2021
Operational start date	01/10/2021
Approved age ranges	16–18 19+
Total Qualification Time (TQT)	1195 hours.
Guided learning hours (GLH)	1136
Assessment	Internal assessment (portfolio of evidence).
Grading information	The qualification and units are graded Pass/Fail.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before apprentices register for this qualification. Centres must follow the information in our document, *A guide to recruiting apprentices onto Pearson qualifications* and *Section 6 Access to qualifications*.

Qualification title	Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence)
Apprenticeship	This qualification is a mandated requirement of the Engineering Technician Apprenticeship Standard in the following pathways 1. Mechatronics Technician 2. Product Design and Development Technician 3. Machining (Conventional Machining) 4. Machining (CNC Machining) 5. Machining (Spring Making) 6. Toolmaker, Tool and Die Maintenance Technician (Toolmaker) 7. Toolmaker, Tool and Die Maintenance Technician (Mould, Tool and Die Equipment) 8. Technical Support Technician (Operational Technical Support) The Apprenticeship Standard can be found here: www.instituteforapprenticeships.org/
Progression	Apprentices who achieve the Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence) can, once progressed through gateway commence their end-point assessment. On completing their apprenticeship, apprentices can apply for Engineering Technician (EngTech) certification. Apprentices who have achieved the qualification and not completed the full apprenticeship could progress to engineering operative or semi-skilled fitter job roles within the engineering industry or to other qualifications. These include the Pearson Higher National Certificate in Engineering and the Pearson Edexcel Level 3 NVQ Diploma in Engineering Maintenance.

3 Qualification structure(s)

Pearson BTEC Level 3 Diploma in Advanced Manufacturing Engineering (Development Competence)

The requirements outlined in the table below must be met for Pearson to award the qualification.

Minimum number of GLH required to achieve qualification	1136
Number of mandatory GLH that must be achieved	68
Minimum number of optional GLH required to achieve qualification	1068

Pathways:	**Min GLH**
Pathway 1 – Mechatronics Technician	2901
Pathway 2 – Product Design and Development Technician	1500
Pathway 3 – Machining (Conventional Machining)	1068
Pathway 4 – Machining (CNC Machining)	1505
Pathway 5 – Machining (Spring Making)	1143
Pathway 6 – Toolmaker, Tool and Die Maintenance Technician (Toolmaker)	1316
Pathway 7 – Toolmaker, Tool and Die Maintenance Technician (Mould, Tool and Die Equipment)	2226
Pathway 8 – Technical Support Technician (Operational Technical Support)	1113

Qualification overarching mandatory units

Apprentices must achieve the three overarching mandatory units for **all** pathways listed.

The units are designed and owned by the Engineering Technician Employer Group and have an 'Employer Unit of Competence' (EUC) number. The EUC unit numbering has been used in this specification.

EUC number	Mandatory units – for the qualification	Level	Guided learning hours
1	Complying with Statutory Regulations and Organisational Safety Requirements	3	13
2	Using and Interpreting Engineering Data and Documentation	3	13
3	Working Efficiently and Effectively in Advanced Manufacturing and Engineering	3	42

Pathway 1 – Mechatronics Technician

Apprentices must achieve the three overarching mandatory units (Units 1–3), plus the three Pathway 1 mandatory units in Group A. They must also complete a minimum of one unit from Group B and a minimum of three units from Group C (the same unit chosen in Group B cannot also be selected from Group C).

EUC number	Mandatory units – Pathway 1	Level	Guided learning hours
Apprentices must complete all three mandatory units from Group A.			
Group A			
4	Handing Over and Confirming Completion of Maintenance Activities	3	100
5	Carrying Out Fault Diagnosis on Engineered Systems	3	530
6	Carrying Out Preventative Planned Maintenance on Engineered Systems	3	380
Apprentices must complete a minimum of one unit from Group B.			
Group B			
7	Maintaining Mechanical Equipment	3	700
8	Maintaining Electrical Equipment	3	700
9	Maintaining Fluid Power Equipment	3	700
10	Maintaining Process Control Systems	3	700
Apprentices must complete a minimum of three units from Group C.			
Group C			
7	Maintaining Mechanical Equipment	3	700
8	Maintaining Electrical Equipment	3	700
9	Maintaining Fluid Power Equipment	3	700
10	Maintaining Process Control Systems	3	700
11	Carrying Out Fault Diagnosis on Electrical Equipment and Circuits	3	500
12	Modifying or Rewiring Electrical Circuits	3	350
13	Testing Electrical Equipment and Circuits	3	500
14	Carrying Out Condition Monitoring of Plant and Equipment	3	371

EUC number	Mandatory units – Pathway 1	Level	Guided learning hours
Group C continued			
15	Carrying Out Fault Diagnosis on Electronic Equipment and Circuits	3	500
16	Testing Electronic Equipment and Circuits	3	500
17	Carrying Out Fault Diagnosis on Fluid Power Equipment and Circuits	3	500
18	Assisting in the Installation of Equipment to Produce an Engineered System	3	480
19	Repairing Electronic Equipment	3	620
20	Producing Off-line Programs for Programmable Logic Controller Equipment	3	819
21	Producing Operating Programs for Industrial Robots	3	819
22	Carrying Out Fault Diagnosis on Mechanical Equipment	3	500
331	Restoring Mechanical Components to Usable Condition by Repair	3	470
332	Producing Replacement Components for Maintenance Activities	3	470

Pathway 2 – Product Design and Development Technician

Apprentices must achieve the three overarching mandatory units (Units 1–3). They must also complete a minimum of four units from the Pathway 2 Optional Units.

If the overall Guided learning hours (GLH) in hours for the mandatory and optional units does not equate to a minimum of 1500 GLH then additional optional units will need to be selected to achieve a minimum of 1500 GLH.

*Apprentices may only choose Unit 024 or 029. They cannot choose both.

EUC number	Optional units – Pathway 2	Level	Guided learning hours
Apprentices must complete a minimum of four units.			
24*	Producing Engineering Drawings/Models Using 3D Computer Aided Techniques	3	1477
29*	Producing Engineering Systems/Services Drawings Using Computer Aided Techniques	3	1477
30	Inspecting Mechanical Products	3	1400
32	Inspecting Fabricated Components and Structures	3	1400
42	Providing Operational Support for Computer Control Programs	3	518
55	Planning Engineering Activities	3	378
56	Implementing Engineering Activities	3	378
57	Monitoring Engineering Activities	3	378
64	Determining Engineering Requirements for the Supply of Products or Services	3	378
71	Carrying Out Health and Safety Risk Assessments on Engineering Activities	3	378
73	Using and Maintaining Business Procedures and Protocols in an Engineering Environment	3	378
74	Applying Workplace Organisation Techniques	3	126
78	Carrying Out Problem Solving Activities	3	107
86	Applying Value Management (Value Engineering and Value Analysis)	3	133
160	Assembling Mechanical Products	3	679

Pathway 3 – Machining (Conventional Machining)

Apprentices must achieve the three overarching mandatory units (units 1-3). They must also complete both units from a minimum of one of the Pathway 3 Optional Unit Groups A–E.

EUC number	Optional units – Pathway 3	Level	Guided learning hours
Apprentices must complete both units from a minimum of one group (A-E).			
Group A			
163	Setting Centre Lathes	3	889
164	Machining Components Using Centre Lathes	3	749
Group B			
312	Setting Shaping, Planing or Slotting Machines for Production	3	759
313	Machining Components Using Shaping, Planing or Slotting Machines	3	669
Group C			
316	Setting Gear Grinding Machines for Production	3	889
317	Machining Components Using Gear Grinding Machines	3	749
Group D			
320	Setting Vertical Boring Machines for Production	3	889
321	Machining Components Using Vertical Boring Machines	3	749
Group E			
324	Setting Broaching Machines for Production	3	759
325	Machining Components Using Broaching Machines	3	309

Pathway 4 – Machining (CNC Machining)

Apprentices must achieve the three overarching mandatory units (Units 1–3). They must also complete a minimum of one unit from Pathway 4 Group A and both units from a minimum of one of the Pathway 4 Optional Unit Groups B–F.

EUC number	Optional units – Pathway 4	Level	Guided learning hours
Apprentices must complete a minimum of one unit from Group A.			
Group A			
171	Loading and Proving CNC Machine Tool Programs	3	217
172	Carrying Out CNC Machine Tool Programming	3	819
Apprentices must complete both units from a minimum of one Group B-G.			
Group B			
173	Setting CNC Turning Machines	3	679
174	Machining Components Using CNC Turning Machines	3	609
Group C			
177	Setting CNC Grinding Machines	3	679
178	Machining Components Using CNC Grinding Machines	3	609
Group D			
187	Setting CNC Horizontal Boring Machines	3	679
188	Machining Components using CNC Horizontal Boring Machines	3	609
Group E			
189	Setting CNC Gear Cutting Machines	3	679
190	Machining Components using CNC Gear Cutting Machines	3	609
Group F			
191	Setting CNC Machining Centres	3	679
192	Machining Components Using CNC Machining Centres	3	609

EUC number	Optional units – Pathway 4	Level	Guided learning hours
Group G			
175	Setting CNC Milling Machines for Production	3	679
176	Machining Components Using CNC Milling Machines	3	609

Pathway 5 – Machining (Spring Making)

Apprentices must achieve the three overarching mandatory units (Units 1–3). They must also complete a minimum of four units from the Pathway 5 Optional Units.

EUC number	Optional units – Pathway 5	Level	Guided learning hours
Apprentices must complete a minimum of four units.			
195	Making Compression Springs Using Hand Forming Methods	3	441
196	Making Torsion Springs Using Hand Forming Methods	3	441
197	Making Extension Springs Using Hand Forming Methods	3	441
198	Making Spring Wire Forms Using Hand Forming Methods	3	441
207	Programming CNC Spring Making Machines	3	819
208	Setting CNC Spring Making Machines for Production	3	441
209	Operating CNC Spring Making Machines	3	280
216	Using Heat to Assist with the Bending and Forming of Spring Components	3	142
217	Carrying Out Heat Treatment of Springs	3	280
219	Carrying Out Quality Control of Spring Making Activities	3	441
220	Manufacturing One-Off Tooling for Spring Making Activities	3	749

Pathway 6 – Toolmaker, Tool and Die Maintenance Technician (Toolmaker)

Apprentices must achieve the three overarching mandatory units (Units 1–3). They must also complete a minimum of one unit from Pathway 6 Group A, and a minimum of two units from Group B.

EUC number	Optional units – Pathway 6	Level	Guided learning hours
Apprentices must complete a minimum of one unit from Group A.			
Group A			
222	Assembling Press Tools	3	679
223	Assembling Injection Mould Tools	3	679
224	Assembling Blow Mould Tools	3	679
225	Assembling Vacuum Forming Tools	3	679
226	Assembling Dies	3	679
Apprentices must complete a minimum of two units from Group B.			
Group B			
227	Producing/Finishing Mould, Press Tool or Die Components Using Hand Fitting Techniques	3	679
228	Repairing or Modifying Mould, Press Tool or Die Components	3	679
229	Producing Mould, Press Tool or Die Components by Manual Machining	3	679
230	Checking that Toolroom Assemblies Comply with Specification	3	280
231	Handing Over and Confirming the Completion of Mould, Press Tool or Die Equipment	3	357
235	Setting a Range of Machines to Produce Toolroom Components	3	1617
236	Machining Toolroom Components Using a Range of Machines	3	1365

Pathway 7 – Toolmaker, Tool and Die Maintenance Technician (Mould, Tool and Die Equipment)

Apprentices must achieve the three overarching mandatory units (Units 1–3), plus the three Pathway 7 mandatory units in Group A. They must also complete a minimum of two units from Group B.

EUC number	Mandatory units – Pathway 7	Level	Guided learning hours
Apprentices must complete all three mandatory units from Group A.			
Group A			
237	Carrying Out Fault Diagnosis on Mould, Press Tool or Die Equipment	3	469
238	Maintaining Mould, Press Tool or Die Equipment	3	679
239	Handing Over and Confirming the Completion of Mould, Press Tool or Die Equipment Maintenance Activities	3	357
Apprentices must complete a minimum of two units from Group B.			
Group B			
228	Repairing or Modifying Mould, Press Tool or Die Components	3	679
229	Producing Mould, Press Tool or Die Components by Manual Machining	3	679
240	Carrying Out Condition Monitoring of Mould, Press Tool or Die Equipment	3	364
241	Carrying Out Planned Maintenance on Mould, Press Tool or Die Equipment	3	357
242	Carrying Out Planned Maintenance on Power Presses	3	679

Pathway 8 – Technical Support Technician (Operational Technical Support)

Apprentices must achieve the three overarching mandatory units (Units 1–3), plus the Pathway 8 mandatory unit in Group A. They must also complete a minimum of one unit from Group B, plus a minimum of two units from Group C.

EUC number	Mandatory unit – Pathway 8	Level	Guided learning hours
Apprentices must complete the mandatory unit from Group A.			
Group A			
54	Resolving Engineering or Manufacturing Support Problems	3	378
Apprentices must complete a minimum of one unit from Group B.			
Group B			
14	Carrying Out Condition Monitoring of Plant and Equipment	3	371
55	Planning Engineering Activities	3	378
56	Implementing Engineering Activities	3	378
57	Monitoring Engineering Activities	3	378
58	Producing Technical Information for Engineering Activities	3	378
59	Obtaining Resources for Engineering Activities	3	378
60	Obtaining and Controlling Materials for Engineering Activities	3	378
61	Providing Technical Sales and Marketing Support for Engineering Activities	3	378
62	Implementing Quality Control Systems and Procedures in an Engineering Environment	3	378
63	Scheduling Engineering Activities	3	378
64	Determining Engineering Requirements for the Supply of Products or Services	3	378
65	Carrying Out Fault Diagnosis on Engineering Plant and Equipment	3	476

EUC number	Mandatory unit – Pathway 8	Level	Guided learning hours
66	Supporting Logistics Operations in an Engineering Manufacturing Environment	3	378
Apprentices must complete a minimum of two units from Group C.			
Group C			
67	Providing Technical Advice and Guidance on Engineering Activities	3	378
68	Carrying Out Project Management of Engineering Activities	3	378
69	Developing and Maintaining Effective Customer Relationships	3	182
70	Handing Over and Exchanging Responsibility for Control of Engineering Activities	3	182
71	Carrying Out Health and Safety Risk Assessments on Engineering Activities	3	378
72	Producing Contractual Arrangements to Supply or Procure Goods or Services for Engineering Activities	3	378
73	Using and Maintaining Business Procedures and Protocols in an Engineering Environment	3	378

4 Assessment requirements

The units in this qualification are all internally assessed.

Assessment Strategy

The assessment strategy for this qualification is included in *Annexe A*. It sets out the overarching assessment requirements and the framework for assessing the units to ensure that the qualification remains valid and reliable. It has been developed by the Engineering Technician Trailblazer employer group.

Language of assessment

Apprentices must use English only during the assessment of this qualification.

An apprentice taking the qualification may be assessed in British Sign Language where it is permitted for the purpose of reasonable adjustment.

Further information on the use of language in qualifications is available in our *Use of languages in qualifications policy*, available on our website.

Internal assessment

The units in this qualification are assessed through an internally and externally quality-assured Portfolio of Evidence made up of evidence gathered during the course of the apprentice's work.

Each unit has specified standards in terms of the performance, skills and knowledge and understanding required to achieve the unit. To pass each unit the apprentice must:

- satisfy all the specified performance requirements by providing sufficient and valid evidence for each, and prove that the evidence is their own
- satisfy all the underpinning skills and knowledge and understanding requirements by providing sufficient and valid evidence for each and prove that the evidence is their own.

Apprentices must have an assessment record that identifies the performance, skills and knowledge and understanding requirements that have been met. The assessment record should be cross-referenced to the evidence provided. The assessment record should include details of the type of evidence and the date of assessment. Suitable centre documentation should be used to form an assessment record.

Presenting evidence

For each unit, performance evidence must be the main form of evidence gathered.

In order to demonstrate consistent competent performance for a unit, a minimum of **three** different examples of performance of the unit activity will be required. Items of performance evidence often contain features that apply to more than one unit, and can be used as evidence in any unit where they are suitable. Performance evidence must be:

- products of the apprentice's work, such as items that have been produced or worked on, plans, charts, reports, standard operating procedures, documents produced as part of a work activity, records or photographs of the completed activity
- evidence of the way the apprentice has carried out the activities, such as witness testimonies, assessor observations or authenticated apprentice reports of the activity undertaken.

Any specific evidence requirements for a unit are given in the *Unit assessment requirements* section of the unit. Please also read carefully the Assessment Strategy, *Annexe A*.

Assessment of knowledge and understanding

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide sufficient evidence for the knowledge and understanding requirements. Where the apprentices' knowledge and understanding is not apparent from performance evidence, it must be assessed through other valid methods and be supported by suitable evidence. The evidence provided to meet these requirements must be in line with the assessment strategy. Any specific assessment requirements are stated in the *Unit assessment requirements* section of each unit in *Section 9 Units*.

Assessor requirements

Centres must ensure:

- assessment is carried out by assessors with relevant expertise in both the occupational area and assessment. The requirements for assessor qualifications and experience are stated in the assessment strategy in *Annexe A*
- internal verification systems are in place to ensure the quality and authenticity of apprentices' work, as well as the accuracy and consistency of assessment. The requirements of internal verifiers (IVs) are stated in the assessment strategy in *Annexe A*.

5 Centre recognition and approval

Centres must have approval prior to delivering or assessing any of the units in this qualification.

Centres that have not previously offered Pearson competence-based qualifications need to apply for, and be granted, centre recognition and approval to offer individual qualifications.

Existing Pearson centres seeking approval to offer Pearson competence-based qualifications, will be required to submit supplementary evidence for approval, aligned with the associated standards and/or assessment requirements.

Centres offering mandatory qualifications for Apprenticeship Standards must be listed on the Education and Skills Funding Agency's Register of Training Organisations and have a contract to deliver them.

Guidance on seeking approval to deliver Pearson vocational qualifications is available on our website.

Approvals agreement

All centres are required to enter into an approval agreement with Pearson, in which the head of centre or principal agrees to meet all the requirements of the qualification specification and to comply with the policies, procedures, codes of practice and regulations of Pearson and relevant regulatory bodies. If centres do not comply with the agreement, this could result in the suspension of certification or withdrawal of centre or qualification approval.

Centre resource requirements

As part of the approval process, centres must make sure that the resource requirements below are in place before offering the qualification:

- appropriate physical resources as outlined in the Assessment Strategy in *Annexe A* (for example a workplace in line with industry standards or a realistic working environment (RWE), where permitted)
- centres must meet any specific human resource requirements outlined in the Assessment Strategy in *Annexe A*
- staff assessing apprentices and internally verifying programmes must meet the occupational competence requirements in the Assessment Strategy.
- systems to ensure continuing professional development (CPD) for staff delivering, assessing and internally verifying the qualification
- health and safety policies that relate to the use of equipment by apprentices
- internal verification systems and procedures (see *Section 4 Assessment requirements*)
- any unit-specific resources stated in individual units.

6 Access to qualifications

Access to qualifications for apprentices with disabilities or specific needs

Equality and fairness are central to our work. Our *Equality, diversity and inclusion policy* requires all apprentices to have equal opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every apprentice.

We are committed to making sure that:

- apprentices with a protected characteristic (as defined by the Equality Act 2010) are not, when they are taking one of our qualifications, disadvantaged in comparison to apprentices who do not share that characteristic
- all apprentices achieve the recognition they deserve from their qualification and that this achievement can be compared fairly to the achievement of their peers.

For apprentices with disabilities and specific needs, the assessment of their potential to achieve the qualification must identify, where appropriate, the support that will be made available to them during delivery and assessment of the qualification.

Centres must deliver the qualification in accordance with current equality legislation. For full details of the Equality Act 2010, please visit www.legislation.gov.uk.

Reasonable adjustable and special consideration

Centres are permitted to make adjustments to assessment to take account of the needs of individual apprentices. Any reasonable adjustment must reflect the normal learning or working practice of an apprentice in a centre or an apprentice working in the occupational area.

Centres cannot apply their own special consideration – applications for special consideration must be made to Pearson and can be made on a case-by-case basis only.

Centres must follow the guidance in the Pearson document *Guidance for reasonable adjustments and special consideration in vocational internally assessed units.*

7 Recognising prior learning and achievement

Recognition of Prior Learning (RPL) considers whether an apprentice can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and so do not need to develop through a course of learning.

Pearson encourages centres to recognise apprentices' previous achievements and experiences in and outside the workplace, as well as in the classroom. RPL provides a route for the recognition of the achievements resulting from continuous learning.

RPL enables recognition of achievement from a range of activities using any valid assessment methodology. If the assessment requirements of a given unit or qualification have been met, the use of RPL is acceptable for accrediting a unit, units or a whole qualification. Evidence of learning must be sufficient, reliable and valid.

Further guidance is available in our policy document *Recognition of prior learning policy and process*, available on our website.

8 Quality assurance of centres

For the qualification in this specification, the Pearson quality assurance model will consist of the following processes.

Centres will receive at least one visit from our Standards Verifier, followed by ongoing support and development. This may result in more visits or remote support, as required to complete standards verification. The exact frequency and duration of Standards Verifier visits/remote sampling will reflect the level of risk associated with a programme, taking account of the:

- number of assessment sites
- number and throughput of apprentices
- number and turnover of assessors
- number and turnover of internal verifiers
- amount of previous experience of delivery.

If a centre is offering a Pearson competence-based qualification alongside other qualifications related to a similar Apprenticeship Standard, wherever possible we will allocate the same Standards Verifier for both qualifications.

For further details, please see the work-based learning quality assurance handbooks, available in the support section of our website:

- *Pearson centre guide to quality assurance – NVQs/SVQs and competence-based qualifications*
- *Pearson delivery guidance & quality assurance requirements – NVQs/SVQs; competence-based qualifications and BTEC Specialist qualifications.*

9 Units

This section of the specification contains the three mandatory units that apply to all eight pathways. Pathway-specific units detailed in the rules of combination are available on the website, https://qualifications.pearson.com/en/qualifications/nvq-and-competence-based-qualifications/engineering-processing-and-manufacturing/advanced-manufacturing-engineering-mechatronics.html

For explanation of the terms within the units, please refer to *Section 13 Glossary*.

It is compulsory for apprentices to meet the required performance, skills and knowledge criteria to achieve a Pass. The unit assessment requirements must also be met by the evidence that is provided by the apprentice.

Where legislation is included in delivery and assessment, centres must ensure that it is current and up to date.

Unit 1: Complying with Statutory Regulations and Organisational Safety Requirements

Level: 3

Guided learning hours: 13

Unit overview

This unit of Competence has been developed by employers in the Advanced Manufacturing and Engineering Sector and is part of an overall development programme designed to meet the requirements of the Sector.

This unit will help to inform the training and development required in order for the apprentice to demonstrate that they are competent in dealing with statutory regulations and organisational safety requirements, in accordance with approved procedures. They will be required to comply with all relevant regulations that apply to their area of work as well as their general responsibilities as defined in the Health and Safety at Work etc. Act 1974. They must also identify the relevant qualified first aiders or appointed person, and know the location of the first-aid facilities. They will have an understanding of the procedures to be adopted in the case of accidents involving injury and in situations where there are dangerous occurrences or hazardous malfunctions of equipment, processes or machinery.

They will need to be fully conversant with the organisation's procedures for fire alerts and the evacuation of premises.

They will be required to identify the hazards and risks that are associated with their job. Typically, these will focus on their working environment, the tools and equipment that they use, materials and substances that they use, working practices that do not follow laid down procedures, and manual lifting and carrying techniques.

Their responsibilities will require them to comply with organisational policies and procedures for the statutory regulations and organisational safety activities undertaken, and to report any problems with the safety activities that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to work with minimal supervision, taking personal responsibility for their own actions and for the way in which they carry out the required engineering activities.

Their underpinning knowledge will provide a good understanding of their work and an informed approach to applying statutory regulations and organisational safety requirements and procedures. They will understand the safety requirements and their application, and will know about the safety requirements in adequate depth to provide a sound basis for carrying out the activities safely and correctly.

They will apply the appropriate occupational behaviours required in the workplace to meet the job profile and overall company objectives, including logical approach, problem-solving orientation, quality focus, personal responsibility and resilience, clear communicator, team player, applies lean manufacturing principles, adaptability, self-motivation, willingness to learn, and commitment.

Assessment requirements

The assessment requirements for this unit are in the Advanced Manufacturing Engineering Assessment Strategy and can be found in *Annexe A*. These requirements have been developed by employers for Advanced Manufacturing Engineering.

Additional information

Although all of the content and assessment requirements must be met in full, employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored training programme, meeting their own business requirements while at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Performance requirements

The apprentice must be able to:

P1 Comply with their duties and obligations as defined in the Health and Safety at Work etc. Act 1974

P2 Demonstrate the required occupational behaviours in line with the job role and company objectives

P3 Present themselves in the workplace suitably prepared for the activities to be carried out

P4 Follow organisational accident and emergency procedures

P5 Recognise and control hazards in the workplace

P6 Use correct manual lifting and carrying techniques

P7 Apply safe working practices and procedures

Skills

The apprentice must be able to:

S1 Demonstrate their understanding of their duties and obligations to health and safety by carrying out **all** of the following:

- 1.1 applying, in principle, their duties and responsibilities as an individual under the Health and Safety at Work etc. Act 1974 and other relevant current legislation
- 1.2 identifying, within their working environment, appropriate sources of information and guidance on health and safety issues, to include:
  - i. eye protection and personal protective equipment (PPE)
  - ii. Control of Substances Hazardous to Health (COSHH) Regulations 2002
  - iii. risk assessments
- 1.3 identifying the warning signs and labels of the main groups of hazardous or dangerous substances
- 1.4 complying with the appropriate statutory regulations at all times

S2 Comply with **all** emergency requirements, to include:

- 2.1 identifying the appropriate qualified first aiders or appointed person and the location of first-aid facilities
- 2.2 identifying the procedures to be followed in the event of injury to themselves or others
- 2.3 following organisational procedures in the event of fire and the evacuation of premises
- 2.4 identifying the procedures to be followed in the event of dangerous occurrences or hazardous malfunctions

Skills

The apprentice must be able to:

S3 Identify the hazards and risks that are associated with **all** of the following:

- 3.1 their working environment
- 3.2 the tools and equipment that they use
- 3.3 the materials and substances that they use
- 3.4 using working practices that do not follow laid-down procedures

S4 Demonstrate **two** of the following methods of manual lifting and carrying techniques:

- 4.1 lifting alone
- 4.2 with assistance of others
- 4.3 with mechanical assistance

S5 Apply safe working practices in an industrial environment, to include **all** of the following:

- 5.1 maintaining a tidy workplace with exits and gangways free from obstructions
- 5.2 using tools and equipment safely and only for the purpose intended
- 5.3 observing organisational safety rules, signs and hazard warnings
- 5.4 taking measures to protect others from harm resulting from any work they are carrying out

Knowledge and understanding

The apprentice must:

K1 Discuss the roles and responsibilities for themselves and others under the Health and Safety at Work etc. Act 1974 and current legislation (such as The Management of Health and Safety at Work Regulations 1999; The Workplace (Health, Safety and Welfare) Regulations 1992; The Personal Protective Equipment at Work Regulations 1992; The Manual Handling Operations Regulations 1992; The Provision and Use of Work Equipment Regulations 1998; The Health and Safety (Display Screen Equipment) Regulations 1992; The Electricity at Work Regulations 1989)

K2 Describe the specific regulations and safe working practices and procedures that apply to their work activities

K3 Compare the warning signs for the nine main groups of hazardous substances defined by The Classification, Packaging and Labelling of Dangerous Substances Regulations 1984

K4 Describe how to locate relevant health and safety information for their tasks and the sources of expert assistance when help is needed

Knowledge and understanding	
The apprentice must:	
K5	Propose what constitutes a hazard in the workplace (such as moving parts of machinery, electricity, slippery and uneven surfaces, dust and fumes, handling and transporting, contaminants and irritants, material ejection, fire, working at height, environment, pressure/stored energy systems, volatile or toxic materials, unshielded processes)
K6	Summarise their responsibilities for dealing with hazards and reducing risks in the workplace (such as hazard spotting and safety inspections; the use of hazard checklists, carrying out risk assessments, COSHH assessments and safe systems of working)
K7	Assess the risks associated with their working environment, the tools, materials and equipment that they use, spillages of oil and chemicals, not reporting accidental breakages of tools or equipment and not following laid-down working practices and procedures
K8	Explain the importance of applying the appropriate occupational behaviours in the workplace and the implications for both the apprentice and the business if these are not adhered to
K9	Investigate what first-aid facilities exist within their work area and within the organisation in general and the procedures to be followed in the case of accidents involving injury
K10	Discuss what constitutes dangerous occurrences and hazardous malfunctions, and why these must be reported even when no one was injured
K11	Discuss the procedures for sounding the emergency alarms, evacuation procedures and escape routes to be used and the need to report their presence at the appropriate assembly point
K12	Explain the organisational policy with regard to firefighting procedures, the common causes of fire and what they can do to help prevent them
K13	Discuss what protective clothing and equipment is available for their areas of activity
K14	Describe how to lift and carry loads safely, and state the manual and mechanical aids available
K15	Discuss how to prepare and maintain safe working areas, standards and procedures to ensure good housekeeping
K16	Explain the importance of safe storage of tools, equipment, materials and products
K17	Assess the extent of their own authority and state to whom they should report in the event of problems that they cannot resolve

Unit 2: Using and Interpreting Engineering Data and Documentation

Level: 3

Guided learning hours: 13

Unit overview

This unit of competence has been developed by employers in the Advanced Manufacturing and Engineering Sector and is part of an overall development programme designed to meet the requirements of the Sector.

This unit identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to make effective use of text, numeric and graphical information by interpreting and using technical information extracted from engineering drawings, technical manuals, reference tables, specifications and charts, in accordance with approved procedures. They will be required to extract the necessary information from the various drawings and related documents in order to establish and carry out the maintenance requirements and to make valid decisions about the quality and accuracy of the equipment being maintained.

Their responsibilities will require them to comply with organisational policy and procedures for obtaining and using the drawings and related specifications. They will be expected to report any problems with the use and interpretation of the drawings and specifications that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to work with minimal supervision, taking personal responsibility for their own actions, and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of the types of drawings and documents used within a maintenance environment and will provide an informed approach to applying instructions and procedures. They will be able to read and interpret the drawings and documents used and will know about the conventions, symbols and abbreviations, in adequate depth to provide a sound basis for carrying out the maintenance activities to the required specification.

They will be able to apply the occupational behaviours required in the workplace to meet the job profile and overall company objectives, including being able to demonstrate personal responsibility and resilience, working effectively in teams, effective communication and interpersonal skills, focus on quality and problem solving and continuous development.

Assessment requirements

The assessment requirements for this unit are in the Advanced Manufacturing Engineering Assessment Strategy and can be found in *Annexe A*. These requirements have been developed by employers for Advanced Manufacturing Engineering.

Additional information

Although all of the content and assessment requirements must be met in full, employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored training programme, meeting their own business requirements while at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Performance requirements
The apprentice must be able to:
P1 Use the approved source to obtain the required data, documentation or specifications
P2 Demonstrate the required occupational behaviours in line with the job role and company objectives
P3 Extract and interpret the required information from the data, documentation or specifications
P4 Use the information obtained to establish work requirements
P5 Deal promptly and effectively with any problems within your control and report those which cannot be solved
P6 Record and/or communicate technical data and information using approved methods
P7 Report any inaccuracies or discrepancies in drawings and specifications

Skills
The apprentice must be able to:
S1 Use approved sources to obtain the necessary drawings and related specifications, and carry out **all** of the following: 1.1 check the currency and validity of the documentation used 1.2 exercise care and control over the documentation at all times 1.3 correctly extract all necessary data in order to carry out the required tasks 1.4 seek out additional information where there are gaps or deficiencies in the information obtained 1.5 deal with and/or report any problems found with the data and documentation 1.6 make valid decisions based on the evaluation of the information extracted from the documentation 1.7 return all documentation to the approved location on completion of the work 1.8 complete all necessary work related documentation such as production documentation, installation documentation, maintenance documentation, planning documentation

S2 Use information extracted from engineering drawings and related documentation, to include **two** of the following:

- 2.1 drawings (such as component drawings, general assembly drawings, modification drawings, repair drawings, welding/fabrication drawings, distribution and installation drawings)
- 2.2 diagrams (such as schematic, fluid power diagrams, piping, wiring/circuit, layout diagrams)
- 2.3 manufacturers manuals/drawings
- 2.4 approved sketches
- 2.5 technical illustrations
- 2.6 photographic images/representations
- 2.7 visual display screen information
- 2.8 technical sales/marketing documentation
- 2.9 contractual documentation
- 2.10 other specific drawings/documents

S3 Use information extracted from related documentation to include **three** from the following:

- 3.1 standard operating procedures
- 3.2 instructions (such as job instructions, drawing instructions, manufacturer's instructions)
- 3.3 specifications (such as material, finish, process, contractual, calibration)
- 3.4 reference materials (such as manuals, tables, charts, fault diagnosis guides)
- 3.5 schedules
- 3.6 operation sheets
- 3.7 maintenance log reports
- 3.8 service/test information/schedules/results
- 3.9 planning documentation
- 3.10 quality control documents
- 3.11 company specific technical instructions
- 3.12 national, international and organisational standards
- 3.13 health and safety standards relating to the activity (such as COSHH)
- 3.14 environmental requirements/information
- 3.15 other specific related documentation

S4 Extract information that includes **three** of the following:

- 4.1 materials or components required
- 4.2 dimensions
- 4.3 tolerances
- 4.4 quality requirements
- 4.5 installation requirements
- 4.6 customer requirements
- 4.7 time scales
- 4.8 financial information
- 4.9 operating parameters
- 4.10 surface texture requirements
- 4.11 location/orientation of parts
- 4.12 process or treatments required
- 4.13 dismantling/assembly sequence
- 4.14 inspection/testing requirements
- 4.15 number/volumes required
- 4.16 repair/service methods
- 4.17 method of manufacture
- 4.18 weld type and size
- 4.19 operations required
- 4.20 connections to be made
- 4.21 surface finish required
- 4.22 shape or profiles
- 4.23 fault finding procedures
- 4.24 test points
- 4.25 safety/risk factors
- 4.26 environmental controls
- 4.27 technical data (such as component data, maintenance data, electrical data, fluid data)
- 4.28 resources (such as tools, equipment, personnel)
- 4.29 utility supply details (such as electricity, water, gas, air)
- 4.30 location of services, including standby and emergency backup systems

Skills

The apprentice must be able to:

4.31 circuit characteristics (such as pressure, flow, current, voltage, speed)

4.32 protective arrangements and equipment (such as containment, environmental controls, warning and evacuation systems and equipment)

4.33 other specific related information (such as financial delivery or contractual data)

Knowledge and understanding

The apprentice must:

K1 Describe the information sources used for the documentation and specifications that they use in their work activities

K2 Explain how the required documentation is obtained, and how to check that it is current and valid

K3 Explain the importance of applying the appropriate occupational behaviours in the workplace and the implications for both the apprentice and the business if these are not adhered to

K4 Describe how to use other sources of information to support the activity (such as manuals, tables, charts, planning and quality documentation, national and international standards)

K5 Describe the procedure for reporting discrepancies, lost or damaged documentation

K6 Describe care and control procedures for the documentation, and the importance of returning them to the designated location on completion of the work activities

K7 Describe the basic drawing conventions that are used, and why there needs to be different types of drawings

K8 Describe the types of drawings/diagrams used, and how they interrelate (such as isometric and orthographic, first and third angle, assembly drawings, circuit and wiring diagrams, block and schematic diagrams)

K9 Explain why technical information is presented in different forms

K10 Describe the meaning of common symbols and abbreviations used within the working environment/work area

K11 Describe imperial and metric systems of measurement, tolerancing and fixed reference points

Knowledge and understanding
The apprentice must:
K12 Explain the meaning of the different symbols and abbreviations found on the documentation that they use (such as wiring and component symbols, surface finish, electronic components, weld symbols, linear and geometric tolerances, pressure and flow characteristics)
K13 Describe the extent of their own responsibility, when to act on their own initiative to find, clarify and evaluate information, and to whom they should report if they have problems that they cannot resolve

Unit 3: Working Efficiently and Effectively in Advanced Manufacturing and Engineering

Level: 3

Guided learning hours: 42

Unit overview

This unit of competence has been developed by employers in the Advanced Manufacturing and Engineering Sector and is part of an overall development programme designed to meet the requirements of the Sector.

This unit identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to work efficiently and effectively in the workplace, in accordance with approved procedures and practices. Prior to undertaking the manufacturing/engineering activity, they will be required to carry out all necessary preparations within the scope of their responsibility. This may include preparing the work area and ensuring that it is in a safe condition to carry out the intended activities, ensuring they have the appropriate job specifications and instructions, and that any tools, equipment, materials and other resources required are available and in a safe and usable condition.

On completion of the manufacturing/engineering activity, they will be required to return their immediate work area to an acceptable condition before recommencing further work requirements. This may involve placing completed work in the correct location, returning and/or storing any tools and equipment in the correct area, identifying any waste and/or scrapped materials and arranging for their disposal, and reporting any defects or damage to tools and equipment used.

Their responsibilities will require them to comply with organisational policy and procedures for the manufacturing/engineering activities undertaken, and to report any problems with the activities, tools or equipment that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out, and to identify and make recommendations where improvements could be made in their working area.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to working efficiently and effectively in a manufacturing /engineering environment. They will understand the need to work efficiently and effectively, and will know about the things they need to consider when preparing and tidying up the work area, how to contribute to improvements, deal with problems, maintain effective working relationships, and agree their development objectives and

targets, in adequate depth to provide a sound basis for carrying out the activities safely and correctly.

They will understand the safety precautions required when carrying out manufacturing /engineering activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

They will be able to apply the occupational behaviours required in the workplace to meet the job profile and overall company objectives, including being able to demonstrate personal responsibility and resilience, working effectively in teams, effective communication and interpersonal skills, focus on quality and problem solving and continuous development.

Assessment requirements

The assessment requirements for this unit are in the Advanced Manufacturing Engineering Assessment Strategy and can be found in *Annexe A*. These requirements have been developed by employers for Advanced Manufacturing Engineering.

Additional information

Although all of the content and assessment requirements must be met in full, employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored training programme, meeting their own business requirements, while at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Performance requirements	
The apprentice must be able to:	
P1	Work safely at all times, complying with health and safety and environmental legislation, regulations and other relevant guidelines
P2	Demonstrate the required occupational behaviours in line with the job role and company objectives/values
P3	Plan the manufacturing/engineering activities before they start them
P4	Prepare the work area for carrying out the manufacturing/engineering activity
P5	Obtain all necessary consumables, tools and equipment and check that they are in a safe and usable condition
P6	Deal promptly and effectively with any manufacturing/engineering problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve
P7	Contribute to the business by identifying possible opportunities for improving working practices, processes and/or procedures
P8	Maintain effective working relationships with colleagues and supervisors
P9	Review personal training and development, as appropriate to the job role
P10	Clean, tidy up and restore the work area on completion of the manufacturing/engineering activity

Skills		
The apprentice must be able to:		
S1	Ensure that they apply **all** the following checks and practices at all times:	
	1.1	adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment (PPE) and other relevant safety regulations
	1.2	wear the appropriate personal protective equipment for the work area and specific activity being carried out
	1.3	use all tools and equipment safely and correctly, and only for their intended purpose including adherence to the Control of Vibration at Work Regulations (Hand and Arm)
	1.4	ensure that the work area is maintained and left in a safe and tidy condition
S2	Demonstrate and apply **all** the following occupational behaviours: **Personal responsibility and resilience**	
	2.1	comply with health and safety guidance and procedures
	2.2	be disciplined and have a responsible approach to risk
	2.3	work diligently regardless of how much they are being supervised

Skills

The apprentice must be able to:

2.4 accept responsibility for managing time and workload

2.5 stay motivated and committed when facing challenges

Working effectively in teams

2.6 make an effort to integrate with the team

2.7 support other people

2.8 consider implications of their own actions on other people and activities

2.9 work effectively to get the task completed

Effective communication and interpersonal skills

2.10 is an open and honest communicator

2.11 communicate clearly using appropriate methods

2.12 listen well to others

2.13 have a positive and respectful attitude

Focus on quality and problem solving

2.14 follow instructions and guidance

2.15 demonstrates attention to detail

2.16 follow a logical approach to problem solving

2.17 seek opportunities to improve quality, speed and efficiency

Continuous development

2.18 reflect on skills, knowledge and behaviours and seeks opportunities to develop

2.19 adapt to different situations, environments or technologies

2.20 has a positive attitude to feedback and advice

S3 Prepare to carry out the manufacturing/engineering activity, ensuring **all** the following as applicable to the activity to be undertaken:

3.1 the work area is free from hazards and is suitably prepared for the activities to be undertaken

3.2 any required safety procedures are implemented

3.3 any necessary personal protection equipment is obtained, and is in a usable condition

3.4 all necessary drawings, specifications and associated documents are obtained

Skills

The apprentice must be able to:

3.5 job instructions are obtained and understood

3.6 tools and equipment required are obtained and checked that they are in a safe and usable condition

3.7 the correct materials or components are obtained

3.8 appropriate authorisation to carry out the work is obtained

S4 Complete the work activities to include **all** of the following:

4.1 returning tools and equipment to the designated location

4.2 returning drawings and work instructions

4.3 disposing of waste materials, in line with organisational and environmental requirements

4.4 completing all necessary documentation accurately and legibly

4.5 identifying, where appropriate, any damaged or unusable tools or equipment

S5 Recognise and deal with problems affecting the manufacturing/engineering activity, to include **four** of the following:

5.1 materials

5.2 job specification

5.3 timescales

5.4 tools and equipment

5.5 quality

5.6 safety

5.7 drawings

5.8 people

5.9 work activities or procedures

5.10 other (to be specified)

S6 Contribute to the business by identifying possible opportunities for improving working practices and/or processes that will impact on **one** of the following:

6.1 standard operating procedures

6.2 quality

6.3 cost

6.4 time such as lead or processing time

6.5 waste

Skills *The apprentice must be able to:*
6.6 energy utilisation 6.7 equipment performance or condition 6.8 resource 6.9 engineering designs Plus **one** from the following: 6.10 health and safety 6.11 customer service 6.12 training and development 6.13 regulatory compliance 6.14 supplier relationships 6.15 communication (internal and/or external) 6.16 team working 6.17 other improvement to be specified by the employer
S7 Contribute to developing their own Continuous Development Plan (CPD) relevant to their career aspirations to include **all** the following: 7.1 describing the levels of skill, knowledge and understanding needed for competence in the areas of work expected of them 7.2 describing their development objectives/program, and how these were identified 7.3 providing information on their expectations and progress towards their identified objectives 7.4 using feedback and advice to improve their personal development and performance objectives

Knowledge and understanding	
The apprentice must:	
K1	Describe the safe working practices and procedures to be followed whilst preparing and tidying up your work area
K2	Explain the importance of applying the appropriate occupational behaviours in the workplace and the implications for both the apprentice and the business if these are not adhered to
K3	Explain how to present themselves in the workplace suitably dressed for the activities to be undertaken (such as being neat, clean and dressed in clothes appropriate to the area of activity)
K4	Explain the importance of reporting to work on time and returning from breaks on time and the potential consequences if this is not adhered to
K5	Describe the types of attitudes and behaviours that are likely to create conflict or negative responses
K6	Describe the benefits of team working and understanding of team objectives
K7	Describe the roles of individual team members and the strengths they bring to the team
K8	Explain the importance of clear communication both oral and written, using appropriate language and format
K9	Describe the need to change communication styles to meet the needs of the target audience
K10	Describe the need to adhere to timescales set for work, whilst maintaining appropriate quality standards and the implications if these are not adhered to
K11	Explain the importance of seeking additional support and guidance when required
K12	Explain why it is important to be open and honest and admit to any errors and/or mistakes
K13	Describe the need to be flexible in their approach to work, responding positively to changes or amendments required by the business
K14	Explain the importance of taking an active and positive part in the implementation of any amendments or changes to work requirements
K15	Describe their individual responsibility to work in an ethical manner and the organisations policies relating to ethical working and behaviours
K16	Explain the importance of respecting others, including an awareness of diversity and inclusion
K17	Describe the personal protective equipment (PPE) to be worn for the manufacturing/engineering activities undertaken (such as correctly fitting overalls, safety shoes, eye protection, ear protection)

Knowledge and understanding
The apprentice must:
K18 Describe the correct use of any equipment used to protect the health and safety of themselves and their colleagues
K19 Describe planning and preparing to carry out the manufacturing/engineering activity (such as obtaining the appropriate drawings/documentation to be used, determining the materials required, determining the tools and equipment required, determining a suitable sequence of operations, determining the quality checks to be made and equipment to be used)
K20 Describe the procedure for ensuring that all documentation relating to the work being carried out is available, prior to starting the activity
K21 Describe the procedure for ensuring that all tools and equipment are available prior to undertaking the activity
K22 Describe the checks to be carried out to ensure that tools and equipment are in full working order, prior to undertaking the activity
K23 Describe the checks to be carried out to ensure that all materials required are correct and complete, prior to undertaking the activity
K24 Explain how to deal effectively with problems that could arise with areas such as quality, safety, people, drawings and other documentation, tools and equipment, or if material are incomplete or do not meet the requirements of the activity and the action that should be taken
K25 Describe the process and procedure used for making suggestions for improving the business
K26 Explain the importance of taking responsibility for identifying and making suggestions for making business improvements
K27 Describe their role in helping to develop their own skills and knowledge (such as checking with their supervisor about the work they are expected to carry out and the standard required to achieve; the safety points to be aware of and the skills and knowledge you will need to develop)
K28 Explain the benefits of continuous personal development, and the training opportunities that are available in the workplace
K29 Explain the importance of reviewing their training and development with trainers and supervisors, of comparing the skills, setting objectives to overcome any shortfall or address any development needs
K30 Describe their responsibilities for providing evidence of their performance and progress (such as submitting work for assessment or the completion of assignments or tests)

Knowledge and understanding	
The apprentice must:	
K31	Explain the importance of maintaining effective working relationships within the workplace (such as listening attentively to instructions from their supervisor, making sure they ask for help and advice in a polite and courteous manner, responding positively to requests for help from others)
K32	Explain the reason for informing others of their activities which may have an impact on their work (such as the need to temporarily disconnect a shared resource like electricity or compressed air supply; making undue noise or creating sparks, fumes or arc flashes from welding)
K33	Describe dealing with disagreements with others in ways which will help to resolve difficulties and maintain long term relationships
K34	Describe the organisational procedures to deal with and report any problems that can affect working relationships
K35	Describe the difficulties that can occur in working relationships, and how to resolve them
K36	Outline the current legislation covering discrimination in the workplace on the ground of race, religion, sex, age and disability
K37	Explain the need to dispose of waste materials and consumables (such as oils and chemicals) in a safe and environmentally friendly way
K38	Explain where tools and equipment should be stored and located, and the importance of returning all tools and documentation to their designated area on completion of your work activities
K39	Explain when to act on their own initiative and when to seek help and advice from others
K40	Explain the importance of leaving the work area in a safe condition on completion of your activities (such as equipment correctly isolated, cleaning the work area and removing and disposing of waste)

10 Appeals

Centres must have a policy for dealing with appeals from apprentices. Appeals may relate to assessment decisions being incorrect or assessment not being conducted fairly. The first step in such a policy is a consideration of the evidence by a Lead Internal Verifier or other member of the programme team. The assessment plan should allow time for potential appeals after apprentices have been given assessment decisions.

Centres must document all apprentices' appeals and their resolutions. Further information on the appeals process can be found in the document *Internal assessment in vocational qualifications: Reviews and appeals policy*, available on our website.

11 Malpractice

Dealing with malpractice in assessment

'Malpractice' refers to acts that undermine the integrity and validity of assessment, the certification of qualifications and/or may damage the authority of those responsible for delivering the assessment and certification.

Pearson does not tolerate actual or attempted actions of malpractice by apprentices, centre staff or centres in connection with Pearson qualifications. Pearson may impose penalties and/or sanctions on apprentices, centre staff or centres where malpractice or attempted malpractice has been proven.

Malpractice may occur or be suspected in relation to any unit or type of assessment within a qualification. For further details on malpractice and advice on preventing malpractice by apprentices, please see Pearson's *Centre guidance: Dealing with malpractice and maladministration,* available on our website.

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Apprentices must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. The *Centre guidance: Dealing with malpractice and maladministration* document gives full information on the actions we expect you to take.

Pearson may conduct investigations if we believe a centre is failing to conduct internal assessment according to our policies. The above document gives further information and examples, and details the penalties and sanctions that may be imposed.

In the interests of apprentices and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

Apprentice malpractice

The head of centre is required to report incidents of suspected apprentice malpractice that occur during Pearson qualifications. We ask centres to complete *JCQ Form M1* (www.jcq.org.uk/malpractice) and email it with any accompanying documents (signed statements from the apprentice, invigilator, copies of evidence, etc) to the Investigations Processing team at candidatemalpractice@pearson.com. The responsibility for determining appropriate sanctions or penalties to be imposed on apprentices lies with Pearson.

Apprentices must be informed at the earliest opportunity of the specific allegation and the centre's malpractice policy, including the right of appeal. Apprentices found guilty of malpractice may be disqualified from the qualification for which they have been entered with Pearson.

Failure to report malpractice constitutes staff or centre malpractice.

Teacher/centre malpractice

The head of centre is required to inform Pearson's Investigations team of any incident of suspected malpractice (which includes maladministration) by centre staff before any investigation is undertaken. The head of centre is requested to inform the Investigations team by submitting a *JCQ M2 Form* (downloadable from www.jcq.org.uk/malpractice) with supporting documentation to pqsmalpractice@pearson.com. Where Pearson receives allegations of malpractice from other sources (for example Pearson staff, anonymous informants), the Investigations team will conduct the investigation directly or may ask the head of centre to assist.

Pearson reserves the right in cases of suspected malpractice to withhold the issuing of results/certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may not be released or they may be withheld.

You should be aware that Pearson may need to suspend certification when undertaking investigations, audits and quality assurances processes. You will be notified within a reasonable period of time if this occurs.

Sanctions and appeals

Where malpractice is proven, we may impose sanctions or penalties, such as:

- mark reduction for affected external assessments
- disqualification from the qualification
- debarment from registration for Pearson qualifications for a period of time.

If we are concerned about your centre's quality procedures we may impose sanctions, such as:

- working with centres to create an improvement action plan
- requiring staff members to receive further training
- placing temporary suspensions on certification of apprentices
- placing temporary suspensions on registration of apprentices
- debarring staff members or the centre from delivering Pearson qualifications
- suspending or withdrawing centre approval status.

The centre will be notified if any of these apply.

Pearson has established procedures for considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from the head of centre (on behalf of apprentices and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in the *JCQ Appeals booklet* (https://www.jcq.org.uk/exams-office/appeals).

12 Further information and publications

- Edexcel, BTEC and Pearson Work Based Learning contact details: qualifications.pearson.com/en/contact-us.html.
- Books, software and online resources for UK schools and colleges: www.pearsonschoolsandfecolleges.co.uk
- Our publications catalogue lists all the material available to support our qualifications. To access the catalogue and order publications, please visit our website.

Further documents that support the information in this specification:

- *Access arrangements and reasonable adjustments* (JCQ)
- *A guide to the special consideration process* (JCQ)
- *Collaborative and consortium arrangements for the delivery of vocational qualifications policy* (Pearson)
- *UK information manual* (updated annually and available in hard copy) or *Entries and information manual* (available online) (Pearson)
- *Distance learning and assessment policy* (Pearson).

Publisher information

Any publisher can seek endorsement for their resources and, if they are successful, we will list their resources on our website.

13 Glossary

Section A – General terminology used in specification

Term	Description
Level	Units and qualifications have a level assigned to them. The level assigned is informed by the level descriptors defined by Ofqual, the qualifications regulator.
Guided learning hours (GLH)	This indicates the number of hours of activities that directly or immediately involve tutors and assessors in teaching, supervising and invigilating apprentices, for example lectures, tutorials, online instruction and supervised study. Units may vary in size.
Total qualification time (TQT)	This indicates the total number of hours that a typical apprentice will take to complete the qualification. This is in terms of guided learning hours but also unguided learning, for example private study, time spent in the workplace to master skills.
Performance	The standard of performance that the apprentice has to demonstrate to confirm competence.
Skills	The skills the apprentice needs to demonstrate to meet the performance requirements.
Knowledge and understanding	The knowledge and understanding that the apprentice has to demonstrate to meet the performance requirements.
Competence	The minimum knowledge, skills and behaviours required to perform a job role effectively.
Valid assessment	The assessment assesses the skills or knowledge/understanding in the most sensible, direct way to measure what it is intended to measure.
Reliable assessment	The assessment is consistent and the agreed approach delivers the correct results on different days for the same apprentices and different cohorts of apprentices.
Workplace simulation	Realistic tasks carried out in the workplace that are additional to the normal work duties for the day to produce evidence for criteria that are very challenging to meet in the natural course of work.

Annexe A: Assessment Strategy

Apprenticeship Standard Advanced Manufacturing Engineering Sector

Employer Occupational Brief

Occupational Competence and Technical Knowledge Qualifications

Assessment Strategy for Employers, Training Providers and Awarding Organisations

Version 2

Table of Contents

Introduction

Employers in the Advanced Manufacturing Engineering Sector have produced this Assessment Strategy to:

- support the implementation and delivery of the Apprenticeship Standard
- provide clarity for Awarding Organisations on what constitutes competent performance
- encourage and promote consistent assessment of Competence and Technical Knowledge requirements
- promote cost effective delivery and assessment plans.

This document also provides definitions for:

- the qualifications and experience required for Assessors/Trainers/Teachers and Verifiers
- the assessment environment for the Foundation and Development Phase Occupational Competence Qualifications
- access to assessment

and requirements relating to:

- carrying out occupational competence assessments
- performance evidence requirements for occupational competence
- assessing knowledge and understanding
- use of witness testimonies
- continuing professional development
- quality control of assessment.

Section 1

Occupational Competence Qualifications (Foundation and Development Phase)

Assessor Requirements to Demonstrate Effective Assessment Practice

Assessment must be carried out by competent Assessors that as a minimum must hold the Level 3 Award in Assessing Competence in the Work Environment. Current and operational Assessors that hold units D32 and/or D33 or A1 and/or A2 as appropriate to the assessment being carried out, will not be required to achieve the Level 3 Award as they are still appropriate for the assessment requirements set out in this Assessment Strategy. However, they will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date Employer Units of Competence.

Assessor Technical Requirements

Assessors must be able to demonstrate that they have verifiable, relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence requirements as set out in the relevant outcomes in the Employer Units of Competence.

This will be demonstrated either by holding a relevant technical qualification or by proven industrial experience of the technical areas to be assessed. The assessor's competence must, at the very least, be at the same level as that required of the Apprentice in the units being assessed.

Assessors must also:

Be fully conversant with the Awarding Organisation's assessment recording documentation used for the Employer Units of Competence against which the assessments and verification are to be carried out, plus any other relevant documentation and system and procedures to support the QA process.

Verifier Requirements (internal and external)

Internal quality assurance (Internal Verification) must be carried out by competent Verifiers that as a minimum must hold the Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practices. Current and operational Internal Verifiers that hold internal verification units V1 or D34 will not be required to achieve the Level 4 Award as they are still appropriate for the verification requirements set out in this Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33or A1 and/or A2 or the Level 3 Award in Assessing Competence in the Work Environment.

External quality assurance (External Verification) must be carried out by competent External Verifiers that as a minimum must hold the Level 4 Award in the External Quality Assurance of Assessment Processes and Practices. Current and operational External Verifiers that hold external verification units V2 or D35 will not be requiredto achieve the Level 4 Award as they are still appropriate for the verification requirements set out in this Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33or A1 and/or A2 or the Level 3 Award in Assessing Competence in the Work Environment.

External and Internal Verifiers will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace QualityAssurance (verification) of Assessment Processes and Practices to the most up todate Employer Units of Competence.

Verifiers, both Internal and External, will also be expected to be fully conversant with the terminology used in the Employer Units of Competence against which theassessments and verification are to be carried out, the appropriate Regulatory

Body's systems and procedures and the relevant Awarding Organisation's documentation, systems and procedures within which the assessment andverification is taking place.

Specific technical requirements for internal and external verifiers

Internal and external Verifiers for the Employer Units of Competence must be ableto demonstrate that have verifiable, sufficient and relevant industrial experience, and must have a working knowledge of the processes, techniques and proceduresthat are used in the engineering industry.

The tables below and overleaf show the recommended levels of technicalcompetence for assessors, internal verifiers, and external verifiers.

Technical Requirements for Assessors and Verifiers

Position	Prime activity requirements	Support activity requirements	Technical requirements (see notes)
Assessor	Assessment Skills	IV Systems	Technical *competence* inthe areas covered by theEmployer Units of Competence being assessed
Internal Verifier	Verification Skills	Assessment Knowledge	Technical *understanding* ofthe areas covered by the Employer Units of Competence being verified
External Verifier	Verification skills	Assessment Understanding	Technical *awareness* of theareas covered by the Employer Units Competence being verified

Notes

1. Technical competence is defined here as a combination of practical skills, knowledge, and the ability to apply both of these, in familiar and new situations, within a real working environment.
2. Technical understanding is defined here as having a good understanding of the technical activities being assessed, together with knowledge of relevant Health & Safety implications and requirements of the assessments.
3. Technical awareness is defined here as a general overview of the subject area, sufficient to ensure that assessment and evidence are reliable, and that relevant Health and Safety requirements have been complied with.
4. The competence required by the assessor, internal verifier and external verifier, in the occupational area being assessed, is likely to exist at three levels as indicated by the shaded zones in the following table.

TechnicalCompetence / Required by:	An ability to *discuss* the general principles of the competences being assessed	An ability to *describe* the practical aspectsof the competence being assessed	An ability to *demonstrate* the practical competences being assessed
Assessor			
Internal Verifier			
External Verifier			

Assessment Environment of the Employer Units of Competence in the Foundation Phase of the Apprenticeship

The Employer Units of Competence are intended to have a wide application throughout the Advanced Manufacturing Engineering Sector. It is necessary therefore to have a flexible approach to the environment in which the Employer Units of Competence are delivered and assessed during the Foundation Phase of the Apprenticeship.

Therefore, there is much to be gained by acquiring the basic engineering competencies required in the Foundation Phase of the Apprenticeship whilst working in a sheltered but realistic environment such as in a Training Centre or College. This is due to an ongoing emphasis on safety critical work activities and the need to ensure flexibility of assessment opportunities to both maintain and enhance the provision of competent personnel within the Advanced Manufacturing Engineering sector. This assessment method will allow a minimum safe level of skills, knowledge and understanding to be achieved and demonstrated by the Apprentice prior to being exposed to the hazards of the industrial environment, thus minimising the risk of injury to themselves and other employees.

For the above reasons the assessment of the Apprentices competence in a sheltered but realistic environment is acceptable for the Employer Units of Competence included the Foundation Stage of the Apprenticeship, where the environment replicates that expected in industry.

Where applicable, the machinery, tools, materials, equipment and resources used must be representative of industry standards and there must be sufficient equipment/resources available for each Apprentice to demonstrate their competence on an individual basis. Workpieces or work outcomes assessed must be the Apprentices own work and should be actual work examples that combine the skills, techniques required by the Employer Units of Competence so that achievement will properly reflect the Apprentices capabilities.

Assessors must therefore ensure that the competency is fully transferable to the workplace. Other aspects that should be considered could include:

- environmental conditions such as lighting conditions, noise levels and thepresence of hazards
- pressure of work such as time constraints and repetitive activities
- producing actual workpieces or work outcomes and the consequence of making mistakes and the effect this has on customer, supplier and departmental relationships.

Assessment Environment of the Employer Units of Competence in the Development Phase of the Apprenticeship

The evidence put forward for the Employer Units of Competence can only be regarded valid, reliable, sufficient and authentic if achieved and obtained in the working environment, where the Apprentice is employed and be clearly attributableto the Apprentice. However, in certain circumstances, simulation/replication of workactivities may be acceptable, but must be kept to an absolute minimum.

The use of high quality, realistic simulations/replication, which impose pressures which are consistent with workplace expectations, should only be used in relation tothe assessment of the following:

- rare or dangerous occurrences, such as those associated with health, safety andthe environment issues, emergency scenarios and rare operations at work;
- the response to faults and problems for which no opportunity has presented forthe use of naturally occurring workplace evidence of apprentices competence;
- aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of apprentices competence.
- Simulations/replications will require prior approval from the specific Awarding Organisation and should be designed in relation to the following parameters:
- the environment in which simulations take place must be designed to match the characteristics of the working environment;
- competencies achieved via simulation/replication must be transferable to theworking environment;
- simulations which are designed to assess competence in dealing with emergencies, accidents and incidents must be verified as complying with relevant health, safety and environmental legislation by a competent health andsafety/environmental control officer before being used;
- simulated activities should place Apprentices under the same pressures of time,access to resources and access to information as would be expected if the activity was real;

- simulated activities should require Apprentices to demonstrate their competence using plant and/or equipment used in the working environment;
- simulated activities which require interaction with colleagues and contacts should require the Apprentice to use the communication media that would be expected at the workplace;
- for health and safety reasons simulations need not involve the use of genuine substances/materials. Any simulations which require the Apprentice to handle or otherwise deal with materials substances/should ensure that the substitute takes the same form as in the workplace.

Access to Assessment

There are no entry requirements required for the Employer Units of Competence unless this is a legal requirement of the process or the environment in which the Apprentice is working in. Assessment is open to any Apprentice who has the potential to reach the assessment requirements set out in the relevant units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

Carrying Out Assessments of the Occupational Competence Qualifications

The Employer Units of Competence have been specifically developed to cover a wide range of activities. The evidence produced for the units will, therefore, depend on the skills and knowledge required by employer and specified in the Apprentices Training Plan. The Skills section of the Employer Units of Competence makes reference to a number of optional items listed in the Skills section of the units (**for example 'any three from five'**). This is the minimum standard set by employers.

Where the unit requirements gives a choice of optional areas, assessors should note that Apprentices do not need to provide evidence of the other areas to complete the unit, unless specified by the employer (in this example above, two items) particularly where these additional items may relate to other activities or methods that are not part of the Apprentices normal workplace activities or required by the employer.

Performance Evidence Requirements of the Occupational Competence Qualifications

Performance evidence must be the main form of evidence gathered.

In order to demonstrate consistent competentperformance for a unit, a minimum of **two** different examples of performance of theunit activity will be required in the Foundation Phase. For the Development Phase a minimum of **three** different examples of performance of the unit activity will be required (there will be no gateway assessment at the end of the Development Phase). Items of performance evidence often contain features that apply to more than one unit, and **can be used as evidence in any unit** where they are suitable performance evidence must be:

- products of the Apprentices work, such as items that have been produced or worked on, plans, charts, reports, standard operating procedures, documentsproduced as part of a work activity, records or photographs of the completed activity
- evidence of the way the Apprentice carried out the activities, such as witness testimonies, assessor observations or authenticated Apprentice reports of the activity undertaken.

Competent performance is more than just carrying out a series of individual set tasks. Many of the units in the Foundation Phase contain statements that require the Apprentice to provide evidence that proves they are capable of combining various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and, therefore, will not be acceptable as demonstrating competent performance.

If there is any doubt as to what constitutes suitable evidence the internal/external verifier should be consulted.

Example: Foundation Unit 6: Maintaining Mechanical Devices and Equipment Unit specific additional assessment requirements:

Specific Unit Requirements

In order to prove their ability to combine different maintenance operations, at least one of the maintenance activities must be of a significant nature, and must cover at least **seven** of the activities listed in paragraph 4 plus the removal and replacement/refitting of a minimum of **five** of the components listed in paragraph 5in the Skills Section.

It is a requirement that training providers and assessors develop a written trainingplan and/or scheme of work that outlines the number of training activities and interventions throughout each planned session. The plan should also outline when assessment is planned to take place, which should be after a number of training activities on the topic have taken place over a sustained period. Competency assessments should not start until the relevant training has been given and the providers/assessors are confident the apprentice can achieve the assessment requirements.

Assessing Knowledge and Understanding requirements in the Occupational Competence Qualifications

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide enough evidence in this area. Where the Apprentices knowledge and understanding is not apparent from performance evidence, it must be assessed by other means and be supported by suitable evidence.

Knowledge and understanding can be demonstrated in a number of different ways.It is recommended that oral questioning and practical demonstrations are used perhaps whilst observing the apprentice undertake specific tasks, as these are considered the most appropriate for these units. Assessors should ask enough questions to make sure that the Apprentice has an appropriate level of knowledge and understanding, as required by the unit.

Evidence of knowledge and understanding will **not** be required for those items in the skills section of the Employer Units of Competence that have not been selected by the Employer.

The achievement of the specific knowledge and understanding requirements in the units **may** not simply be inferred by the results of tests, exams or assignments from other units such as in the technical knowledge qualifications or other training programmes. Where evidence is submitted from these sources, the assessor must, as with any assessment, make sure the evidence is valid, reliable, authentic, directly attributable to the Apprentice, and meets the full knowledge and understanding requirements of the unit. Awarding Organisations should be able to provide advice and guidance where evidence from Technical Knowledge qualificationtests and/or assignments can be mapped and used to meeting the requirements of the Occupational Competence unit requirements.

Where oral questioning is used the assessor must retain a record of the questionsasked, together with the Apprentices answers.

Witness testimony

Where ‘observation is used to obtain performance evidence, this must be carriedout against the unit requirements. Best practice would require that such observation is carried out by a qualified Assessor. If this is not practicable, then alternative sources of evidence may be used.

For example, the observation may be carried out against the performance requirements by someone else that is in close contact with the Apprentice. This could be a team leader, supervisor, mentor or line manager who may be regarded as a suitable witness to the Apprentices competency. However, the witness must be technically competent in the process or skills that they are providing testimony for, to at least the same level of expertise as that required of the Apprentice. It will be the responsibility of the assessor to make sure that any witness testimonies accepted as evidence of the Apprentices competency are reliable, auditable and technically valid.

Maximising opportunities to use assessment evidence

One of the critical factors required in order to make this Assessment Strategy as efficient and effective as possible and to ease the burden of assessment, is the Assessors ability and expertise to work in partnership with the Apprentice and their employer to provide advice and guidance on how to maximise opportunities to crossreference performance and knowledge evidence to all relevant Employer Units of Competence. For example if a knowledge statement is repeated in a number of separate Employer Units of Competence and the expected evidence/response to that statement is the same including the context, then the same piece of evidence should be cross referenced to the appropriate units. As stated above, evidence fromTechnical Knowledge qualification test and assignments etc. should be used where this is valid, reliable and can be attributed to the individual Apprentice.

Section 2

General Requirements

Continuing Professional Development (CPD)

Centres must support their staff to ensure that they have current technical knowledge of the occupational area, that delivery, mentoring, training, assessment and verification are in line with best practice, technical advancements and that they will take account of any national or legislative developments.

There must be an auditable individual CPD plan in place for all staff assessing and verifying the qualifications within the relevant foundation and development phases, the plan must meet the relevant provider and Advanced Manufacturing Engineering employer requirements.

Assessors/Teachers/Trainers/Lecturers (as applicable):

- Must understand the Engineering Technician (UK spec) requirements when providing guidance to assessors. They will be required to provide a signed declaration confirming they have read and understood the Engineering Technician (UK spec) and the evidence requirements to meet the EngineeringTechnician (UK spec) criteria (Currently in development). The Engineering Technician (UK spec) can be found at www.engc.org.uk.
- Must understand the requirements of the relevant Apprenticeship Standards –End of Scheme Assessment Recording Document (Currently in development).
- Must understand the requirements of the relevant Apprenticeship Standards – Behavioral Framework and the review and assessment recording documentation (Currently in development).

Quality Control of Assessment

General

There are two major points where an Awarding Organisation interacts with the Centre in relation to the External Quality Control of Assessment and these are:

- approval – when a Centre take on new qualifications/units, the Awarding Organisation, normally through an External Verifier (EV) ensures that the Centreis suitably equipped and prepared to deliver the new units/qualification
- monitoring – throughout the ongoing delivery of the qualification/units the Awarding Organisation, through EV monitoring and other mechanisms must maintain the quality and consistency of assessment of the units/qualification.

Approval

In granting Approval, the Awarding Organisation, normally through its External Verifiers (EV) must ensure that the prospective Centre:

- meets the requirements of the Qualification Regulator
- has sufficient and appropriate physical and staff resources
- meets relevant health and safety and/or equality and access requirements
- has a robust plan for the delivery of the qualification/units.
- The Awarding Organisation may visit the Centre to view evidence or may undertake this via other means.

Monitoring

The Awarding Organisation, through EV monitoring and other mechanisms must ensure:

- that a strategy is developed and deployed for the ongoing Awarding Organisation monitoring of the Centre. This strategy must be based on an activerisk assessment of the Centre. In particular the strategy must identify the Apprentice, assessors and Internal Verifier sampling strategy to be deployed and the rationale behind this
- that the Centre's internal quality assurance processes are effective inassessment
- that sanctions are applied to a Centre where necessary and that corrective actions are taken by the Centre and monitored by the Awarding Organisation/EV
- that reviews of Awarding Organisation's external auditing arrangements are undertaken.

Notes

a) It is recognised that each Awarding Organisation (AO) will have its own guidance and procedure on the internal and external quality assurance process applied to these qualifications. See individual AO websites for further information

b) This Assessment Strategy is “work in progress” and will be amended and reissued as the Competence and Technical Knowledge Qualifications and assessment methodologies are developed and modified

c) The Advanced Manufacturing Engineering Sector is mindful that its Apprenticeships are and **must** be available across all four Nations in the UK where applicable. Therefore the Sector has ensured that the Employer Occupational Brief (EOB) and the associated Employer Units of Competence are directly aligned to the existing format and content of the Sectors National Occupational Standards (NOS

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