Level 3 Diploma in

MANUFACTURING
ENGINEERING

Advanced Manufacturing and Engineering - Technical Support Technician (Development Competence)

Qualification Specification

Overview

This qualification has been developed to provide learners with the skills and knowledge they will need to carry out one of the job roles included within the Technical Support Technician standard. It covers the relevant health and safety requirements to ensure that all aspects of a Technical Support Technician occupational role can be carried out safely.

Typical job roles in - engineering drawing, quality control, computer control programming, operational technical support, engineering software development.

Qualification code:	603/2290/1
Level:	3
Total Qualification Time (TQT):	Min 1104 - Max 2252 hours
Minimum learning age:	16

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01

Purpose of qualification

What is this qualification?

This qualification is a competency qualification which is included in an appropriate qualification framework and has been approved by the advanced manufacturing and engineering sector employer groups which is made up a range of employers, providers and professional institutions.
The qualification focuses on the skills, knowledge and behaviours required to achieve the development phase requirements of a relevant apprenticeship standard. This arrangement ensures that when the learner completes the qualification they will have gained knowledge and practical experience of some of the situations that they could face within the occupational sector in which it is being delivered.
It covers specific skills knowledge and behaviours of a range of engineering disciplines which have been developed in consultation with engineering industry specialists and training providers to ensure that it meets the needs of industry employers and learners.

What does this qualification cover?

The content and structure of this qualification has been developed to provide the specific level of skills, knowledge and behaviours required to be achieved and assessed to demonstrate full occupational competence in the development phase of the apprenticeship. The qualification units are listed in Section 3.

The qualification has a Min. 1104 - Max. 2252 TQT in hours.

The Guided Learning values can include the following examples in line with regulatory requirements (this is not an exhaustive list and other examples could be used as outlined in regulatory guidance):

- supervised teaching and learning and supervised work-based learning
- all forms of assessment which takes place under immediate guidance or supervision of an appropriate individual (lecturer, supervisor, tutor, mentor, etc.), including where the assessment is competence based and may be turned into a learning opportunity
- supervised e-learning, oral and written questioning, workplace induction
- supervised work: student works under supervision of employer/direct supervisor
- final assessment: student is supervised by employer/direct supervisor during the assessment.

Who is this qualification for?

- learners who are working towards a relevant apprenticeship standard
- learners who are looking to advance to a higher level qualification/apprenticeship

Who supports the qualification?

This qualification is:

- accredited by Ofqual at Level 3
- supported by Semta
- supported by the advanced manufacturing and engineering sector

What could this qualification lead to?

Typical job roles in: engineering drawing, quality control, computer control programming, operational technical support, engineering software development.
This qualification will also provide progression onto other suitable and appropriate Level 3 and Level 4 engineering qualifications

Entry requirements

Learners must be at least 16 years old. There are no formal entry requirements for this qualification; however centres should ensure that the learners have the potential to achieve this qualification. Learners must have the minimum levels of literacy and numeracy to complete the learning outcomes and the external assessment.

Centres should make learners with particular requirements aware of the content of the qualification and they should be given every opportunity to successfully complete the qualification. EAL will consider any reasonable suggestions for, and from, those with disabilities that would help them to achieve the learning outcomes without compromising the standards required.

When used as part of an apprenticeship standard, apprentices must have achieved the requirements of the foundation phase of the apprenticeship in line with the apprenticeship standard they are working towards.

How is the qualification achieved?

The qualification is achieved when all the necessary units have been completed. The centre will then be able to apply for the learner's certificate of achievement. The learners will also receive a certificate of unit credit, listing all the units they have achieved.

02

What will be assessed?

This qualification is gained when all the performance, skills, knowledge and behaviours have been demonstrated across the assessment criteria for each unit selected.

The assessment criteria within the Units of Competence have been specifically developed to cover a wide range of activities relevant to the role carried out by a Technical Support Technician.

The evidence produced for the units will, therefore, depend on the skills and knowledge required by an employer and specified in the apprentices training plan.

Grading criteria

This qualification is not graded, learners can achieve a pass or be referred.

To achieve a pass, learners must be able to demonstrate their performance, skills, knowledge and behaviours across all their chosen mandatory and optional units.

How will it be assessed?

Performance evidence must be a product of the apprentices 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 together with evidence of the way the apprentice carried out the activities, such as witness testimonies, assessor observations or authenticated apprentice reports of the activity undertaken.

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.

03

Structure

The apprentice is required to complete the required number of mandatory units of competence, followed by the required number of optional units of competence.

Mandatory units: *All* **three** *mandatory units must be completed*

EAL Code	Unit Title	GL(hrs)	Ofqual Code
AUEC3-001	Complying with statutory regulations and organisational safety requirements	13	Y/615/3996
AUEC3-002	Using and interpreting engineering data and documentation	13	D/615/3997
AUEC3-003	Working efficiently and effectively in advanced manufacturing and engineering	42	K/615/3999

Optional units - the unit requirements for one of the following pathways must be completed

Pathways:

a. Engineering Drawing

Complete one of the following units:

EAL Code	Unit Title	GL(hrs)	Ofqual Code
AUEC3-023	Producing mechanical engineering drawings using computer aided techniques	1477	K/615/4005
AUEC3-024	Producing engineering drawings/models using 3D computer aided techniques	1477	M/615/4006
AUEC3-025	Producing electrical engineering drawings using computer aided techniques	1477	T/615/4007
AUEC3-026	Producing electronic engineering drawings using computer aided techniques	1477	A/615/4008
AUEC3-027	Producing fabrication/structural engineering drawings using computer aided techniques	1477	F/615/4009
AUEC3-028	Producing fluid power engineering drawings using computer aided techniques	1477	T/615/4010
AUEC3-029	Producing engineering systems/services drawings using computer aided techniques	1477	A/615/4011

b. Quality Control

Complete one of the following units:

AUEC3-030	Inspecting mechanical products	1400	L/615/4014
AUEC3-031	Inspecting components using co-ordinate measuring machines (CMM)	1379	D/615/4017
AUEC3-032	Inspecting fabricated components and structures	1400	K/615/4022
AUEC3-033	Carrying out visual inspection of welded fabrications	1400	K/615/4019
AUEC3-034	Inspecting and testing electrical products	1400	M/615/4023
AUEC3-035	Inspecting and testing electronic products	1400	T/615/4024
AUEC3-036	Checking and calibrating mechanical inspection equipment	1372	A/615/4025
AUEC3-037	Checking and calibrating electrical and electronic test equipment	1372	F/615/4026
AUEC3-038	Checking and calibrating process control instrumentation	1372	J/615/4027

c. Computer Control Programming

Complete one of the following units:

AUEC3-042	Providing operational support for computer control programs	518	R/615/4032
AUEC3-043	Loading and proving computer control programs	217	Y/615/4033

Plus one more unit from the following:

AUEC3-044	Producing operating programs for co-ordinate measuring machines (CMM)	819	D/615/4034
AUEC3-020	Producing off-line programs for programmable logic controller equipment	819	D/615/4003
AUEC3-021	Producing operating programs for industrial robots	819	H/615/4004
AUEC3-045	Producing off-line programs for CNC laser profiling machines	819	K/615/4036
AUEC3-046	Producing off-line programs for CNC fabrication machines	819	T/615/4038
AUEC3-047	Producing off-line programs for CNC turning machines	819	A/615/4039
AUEC3-048	Producing off-line programs for CNC milling machines	819	M/615/4040
AUEC3-049	Producing off-line programs for CNC grinding machines	819	T/615/4041
AUEC3-050	Producing off-line programs for CNC gear cutting machines	819	A/615/4042
AUEC3-051	Producing off-line programs for CNC electro-discharge machining	819	F/615/4043
AUEC3-052	Producing off-line programs for CNC boring machines	819	L/615/4045
AUEC3-053	Producing off-line programs for CNC machining centres	819	R/615/4046

d. Operational Technical Support

Complete the following unit:

AUEC3-054	Resolving engineering or manufacturing support problems	378	Y/615/4047

Plus three more units of which one must be from Group A

Group A units:

AUEC3-055	Planning engineering activities	378	M/615/4054
AUEC3-056	Implementing engineering activities	378	A/615/4056
AUEC3-057	Monitoring engineering activities	378	Y/615/4064
AUEC3-058	Producing technical information for engineering activities	378	D/615/4065
AUEC3-059	Obtaining resources for engineering activities	378	H/615/4066
AUEC3-060	Obtaining and controlling materials for engineering activities	378	K/615/4067
AUEC3-061	Providing technical sales and marketing support for engineering activities	378	M/615/4068
AUEC3-062	Implementing quality control systems and procedures in an engineering environment	378	T/615/4069
AUEC3-063	Scheduling engineering activities	378	K/615/4070
AUEC3-064	Determining engineering requirements for the supply of products or services	378	M/615/4071
AUEC3-014	Carrying out condition monitoring of plant and equipment	371	R/615/4001
AUEC3-065	Carrying out fault diagnosis on engineering plant and equipment	476	T/615/4072
AUEC3-066	Supporting logistics operations in an engineering manufacturing environment	378	Y/615/4078

Group B units:

AUEC3-067	Providing technical advice and guidance on engineering activities	378	F/615/4091
AUEC3-068	Carrying out project management of engineering activities	378	T/615/4119
AUEC3-069	Developing and maintaining effective customer relationships	182	F/615/4124
AUEC3-070	Handing over and exchanging responsibility for control of engineering activities	182	D/615/4129
AUEC3-071	Carrying out health and safety risk assessments on engineering activities	378	Y/615/4145
AUEC3-072	Producing contractual arrangements to supply or procure goods or services for engineering activities	378	J/615/4173
AUEC3-073	Using and maintaining business procedures and protocols in an engineering environment	378	Y/615/4176

e. Engineering Software Development

Complete all of the following units:

AUEC3-251	Determining engineering software requirements	378	Y/616/2259
AUEC3-252	Producing engineering software design	476	L/616/2260
AUEC3-253	Producing engineering software implementation	378	T/616/2253
AUEC3-254	Testing engineering software	476	J/616/2256

Plus one more unit from the following:

AUEC3-255	Performing engineering software analysis techniques	476	H/616/2250
AUEC3-256	Measuring engineering software quality	378	D/616/2246
AUEC3-257	Performing engineering software configuration management	476	H/616/2247
AUEC3-258	Performing engineering software acquisition	378	L/616/2243
AUEC3-259	Performing engineering software safety assessments	378	R/616/2244
AUEC3-260	Performing low level programming for engineering software	476	J/616/2239
AUEC3-261	Performing computer system security assessments for engineering software	378	F/616/2241