Level 3 Extended Diploma in Advanced Manufacturing Engineering (Development Knowledge)

Qualification Specification

Overview
This qualification provides learners with knowledge and understanding of a complex blend of skills, knowledge and occupational behaviours across Advanced Manufacturing Engineering disciplines. The qualification covers the advanced knowledge, understanding and skills that are required by someone working in the Advanced Manufacturing Engineering sector. It takes a hands-on approach to training.

Typical Job
A variety of disciplines within the Advanced Manufacturing and Engineering sector.

Qualification code:	603/1354/7
Level:	3
Total qualification time:	1790
Guided learning (hours):	1200
Minimum learning age:	16

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Purpose of qualification

What is this qualification?

The EAL Level 3 Extended Diploma in Advanced Manufacturing Engineering is a Vocational Related Qualification (VRQ). It will provide learners with knowledge and understanding of a complex blend of skills, knowledge and occupational behaviours across Advanced Manufacturing Engineering disciplines. The qualification covers the advanced knowledge, understanding and skills that are required by someone working in the Advanced Manufacturing Engineering sector. It takes a hands-on approach to training by providing learners with:

- Knowledge and understanding of a range of Advanced Manufacturing Engineering disciplines.
- Information that will help them make more informed decisions about their career options.
- Personal skills to help them work effectively and achieve their potential.

This is a graded qualification; learners can achieve a Pass, Merit or Distinction.

What does this qualification cover?

This qualification has three mandatory units, which provides learners with knowledge and understanding of: health and safety in the engineering workplace, communications and mathematics, and a variety of optional units, from which a learners must complete the required number of units totalling a minimum of 1005 Guided Learning (Hours).

This qualification has a minimum 1200 GL(H) and 1790 Total Qualification Time.

Who is this qualification for?

This qualification is predominantly for learners completing the development phase of an Advanced Manufacturing Engineering apprenticeship standard and would also like to extend their skills, knowledge and occupational behaviours. It is also suitable for learners in full time education who would like to gain an advanced level of knowledge and understanding about the sector. The qualification may also be suitable for learners who are considering a career change. The qualification has been specifically designed for a range of Advanced Manufacturing Engineering disciplines or to offer progression into a higher level of study or an Apprenticeship.

It is suitable for learners aged:

- 16-18
- 19+

Who supports the qualification?

This qualification is:

- Regulated at Level 3.
- Endorsed by employers as facilitating completion of the development knowledge appropriate for the Advanced Manufacturing Engineering sector.

What could this qualification lead to?

Typical job roles include:

Various disciplines within the Advanced Manufacturing and Engineering sector.

This qualification relates to:

- EAL Level 2 NVQ Diploma in Performing Engineering Operations.
- EAL Level 2 Certificates and Diplomas in Engineering Technologies.
- EAL Level 2 Diploma in Advanced Manufacturing and Engineering (foundation phase).
- EAL Level 3 Certificates and Diplomas in Engineering Technologies.
- Further EAL level 3 engineering and manufacturing competence qualifications.

Entry requirements

Learners must be at least 16 years old. Any entry requirements for this qualification can be found in the relevant Advanced Manufacturing Engineering Standard. Learners must have the potential to achieve all aspects of the qualification. In particular, learners should be able to demonstrate that they have the minimum levels of literacy and numeracy required to comply with the health and safety aspects of the qualification, the completion of the learning outcomes, and the assessments.

How is the qualification achieved?

This qualification will be achieved when the learner has successfully completed:

- Three core mandatory units, comprising Centre marked practical/ knowledge assessments.
- Optional units, totalling a minimum of 1005 Guided Learning (Hours), comprising an on-screen multiple-choice examination and Centre marked practical/theory assessments.

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What will be assessed?

This qualification is made up of units to which appropriate assessment methods have been applied. The units contain the learning outcomes and the assessment criteria that the learner is to be assessed against.

All learning outcomes within the qualification will be assessed. In order to meet this requirement, it is advised that centres should maintain an assessment and feedback record for each learner. This will detail the evidence evaluated against the learning outcome and the feedback given to the learner. All learner evidence must be available to the EAL External Quality Assurer.

How will it be assessed?

Assessment methods within this qualification include Centre marked practical and knowledge assessments for the three mandatory units, an on-screen multiple choice examination for one of the optional units, and Centre marked practical and knowledge assessments for all other optional units. Assessment methods have been designed to assess the knowledge, understanding and skills of learners for all units.

The on-screen multiple choice examinations are set by EAL and marked by EAL. The internal assessments are set by EAL and marked by members of the delivery team at the Centre.

Where the assessment takes the form of written/short answer or multiple choice question papers, these must be treated as controlled assessments.

All assessment decisions are then subject to internal and external quality assurance.

Grading Criteria

Learners must achieve a Pass in ALL components for the qualification to be awarded. If learners are unsuccessful in one or more of the assessment components then the overall result for the qualification will be 'referred' and a certificate will not be awarded.

Providing learners are successful in ALL assessment components , the final grade for the qualification will be determined from the grades achieved by learners within the mandatory units and within the optional units.

Please refer to the Grading Criteria section within the Delivery Pack and Learner Pack on how to grade individual units.

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Structure

This qualification will be obtained by the learner once they have successfully completed the all **three mandatory units,** and the required number of optional units totalling a minimum of **1005** Guided Learning (Hours).

This qualification has a minimum 1200 GL(H) and 1790 Total Qualification Time.

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

Unit Code	Unit Title	GL(H)	Ofqual Code
AMEDK3/001	Health and Safety in the Engineering Workplace	60	K/615/6482
AMEDK3/002	Communications for Engineering Technicians	60	M/615/6483
AMEDK3/003	Mathematics for Engineering Technicians	75	T/615/6484

Optional Units: A minimum of **1005 Guided Learning (Hours)** must be completed:

Unit Code	Unit Title	GL(H)	Ofqual Code
AMEDK3/004	Engineering Project	120	A/615/6485
AMEDK3/005	Mechanical Principles of Engineering Systems	60	F/615/6486
AMEDK3/006	Electrical and Electronic Principles in Engineering	75	J/615/6487
AMEDK3/007	Properties and Applications of Engineering Materials	60	L/615/6488
AMEDK3/008	Further Mechanical Principles of Engineering Systems	60	R/615/6489
AMEDK3/009	Applications of Mechanical Systems in Engineering	60	J/615/6490
AMEDK3/010	Engineering Organisational Efficiency and Improvement	75	L/615/6491
AMEDK3/011	Maintenance of Fluid Power Systems and Components	75	R/615/6492
AMEDK3/012	Computer Aided Design (CAD) Techniques	75	Y/615/6493
AMEDK3/013	Application and Principles of Programmable Logic Controllers (PLCs)	75	D/615/6494
AMEDK3/014	Further Mathematics for Engineering Technicians	75	H/615/6495
AMEDK3/015	Engineering Maintenance Procedures and Techniques	75	K/615/6496
AMEDK3/016	Maintenance of Mechanical Systems	75	M/615/6497
AMEDK3/017	Installation of Electrical Equipment	75	T/615/6498
AMEDK3/018	Features and Applications of Electrical Machines	60	A/615/6499
AMEDK3/019	Three-Phase Motors and Drives	60	H/615/6500
AMEDK3/020	Further Electrical and Electronic Principles	75	K/615/6501

Structure

Optional Units: (continued):

Unit Code	Unit Title	GL(H)	Ofqual Code
AMEDK3/021	Computer Numerical Control (CNC) Programming/Machining	75	A/615/8270
AMEDK3/022	Electro, Pneumatic and Hydraulic Systems and Devices	75	F/615/8271
AMEDK3/023	Engineering Drawing for Technicians	75	J/615/8272
AMEDK3/024	Monitoring and Fault Diagnosis of Engineering Systems	75	L/615/8273
AMEDK3/025	Principles and Applications of Engineering Measurement Systems	75	R/615/8274
AMEDK3/026	Mechanical Measurement and Inspection Techniques	75	Y/615/6498
AMEDK3/027	Industrial Robot Technology	75	D/615/8276
AMEDK3/028	Fabrication and Welding Principles	75	T/617/2376
AMEDK3/029	Welding Principles	75	A/617/2377
AMEDK3/030	Pattern Development	75	F/617/2378
AMEDK3/031	Manual Metal-Arc (MMA) Welding	75	J/617/2379
AMEDK3/032	Metal Inert Gas, Metal Active Gas (MIG/MAG) Welding	75	A/617/2380
AMEDK3/033	Tungsten Inert Gas (TIG) Welding Process	75	F/617/2381
AMEDK3/034	Mechanised Welding Processes	75	J/617/2382
AMEDK3/035	Automated Welding Processes	75	L/617/2383
AMEDK3/036	Producing Sheet Metal Fabrications	75	R/617/2384
AMEDK3/037	Sheet Metalwork Technology	75	Y/617/2385
AMEDK3/038	Producing Plate Fabrications	75	D/617/2386
AMEDK3/039	Producing Pipework Fabrications	75	H/617/2387
AMEDK3/040	Managing Fabrication Activities	75	K/617/2388
AMEDK3/041	Operation of Vehicle Chassis Systems	75	M/617/2389
AMEDK3/042	Vehicle Engine Principles, Operation, Service and Repair	75	H/617/2390
AMEDK3/043	Vehicle System Fault Diagnosis and Rectification	75	K/617/2391
AMEDK3/044	Electrical and Electronic Principles for Vehicle Technology	75	M/617/2392
AMEDK3/045	Vehicle Electrical Charging and Starting Systems	75	T/617/2393
AMEDK3/046	Operation and Testing of Vehicle Electronic Ignition Systems	75	A/617/2394
AMEDK3/047	Vehicle Engine Management Systems	75	F/617/2395

Structure

Optional Units: (continued):

Unit Code	Unit Title	GL(H)	Ofqual Code
AMEDK3/048	Vehicle Electronic Ancillary and Information Systems	75	J/617/2396
AMEDK3/049	Diesel Fuel Injection Systems for Compression Ignition Engines	75	L/617/2397
AMEDK3/050	General Engineering Maintenance Techniques	75	Y/617/2399
AMEDK3/051	Panel Wiring for Engineering Applications	75	F/617/2400
AMEDK3/052	Building Mechanical Maintenance Systems and Services	75	J/617/2401
AMEDK3/053	Engineering Instrumentation	75	L/617/2402
AMEDK3/054	Engineering Inspection and Quality Control	75	R/617/2403
AMEDK3/055	Engineering Design Process	75	Y/617/2404
AMEDK3/056	Analogue Systems Engineering	75	D/617/2405
AMEDK3/057	Electrical Power for Engineering Applications	75	H/617/2406
AMEDK3/058	Workplace Improvement	75	K/617/2407
AMEDK3/059	Toolmaking/Presswork/Extrusion Design	75	M/617/3932
AMEDK3/060	Advanced Manufacturing Techniques-Computer Numerical Control (CNC)	75	T/617/3933
AMEDK3/061	Advanced Manufacturing Techniques	75	F/617/3935
AMEDK3/062	Analogue Electronics	75	H/617/7332
AMEDK3/063	Digital Electronics	75	K/617/7333
AMEDK3/064	Microelectronics	75	M/617/7334
AMEDK3/065	Data Communication and Networking	75	T/617/7335
AMEDK3/066	Radio and Radar Systems	75	A/617/7336
AMEDK3/068	Digital Systems	75	J/617/7338

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