



Level 2 Certificate in **ENGINEERING TECHNOLOGIES**

Qualification Specification

Overview

This qualification has been developed to provide learners with an intermediate knowledge of the practices and processes of engineering technology. It covers knowledge, understanding and skills that are relevant to a wide variety of careers and study routes and take a hands-on approach to basic engineering training.

Typical Job

Mechanical Fitter, Maintenance Engineer, Manufacturing Engineer, Electrical Engineer, Electronics Engineer, Sheet Metal Worker, CNC Operator, Welder.

| | |
|---------------------------|-------------------|
| Qualification code: | 601/5670/3 |
| Level: | 2 |
| Credit value: | 25 |
| Total qualification time: | 250 |
| Guided learning hours: | Min 230 - Max 230 |
| Minimum learning age: | 14 |

Purpose of qualification

The EAL Level 2 Certificate in Engineering Technologies is a Vocational Related Qualification (VRQ). It will give learners knowledge and understanding of a range of engineering competencies relevant to a specific job role. The qualification covers the intermediate knowledge, understanding and skills that are required by someone working in the engineering industry. It takes a hands-on approach to engineering training by providing learners with:

- Knowledge and understanding of specific engineering competencies
- 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 core mandatory units, which provides learners with knowledge of the engineering environment, techniques and principles within the engineering sector, and 8 pathways within the optional units, from which a learners will select one from the qualification pathways and structure listed on pages 3-7.

Who is this qualification for?

This qualification is predominantly for learners completing an intermediate level Apprenticeship or in full time education who are interested in engineering and would like to gain an intermediate level of knowledge and understanding about the engineering sector. The qualification may also be suitable for learners who are interested in engineering technology and/or are considering a career change. The qualification has been specifically designed to offer progression into a higher level of study or an Apprenticeship.

It is suitable for learners aged:

- 14-16
- 16-18
- 19+

Who supports this qualification?

This qualification is:

- Regulated at Level 2
- Endorsed by a number of post-16 providers as facilitating completion of the knowledge requirements for a range of Engineering Apprenticeships or a range of post-16 learning programmes at level 2 and 3.

What could this qualification lead to?

Typical job roles include:

Mechanical Fitter, Maintenance Engineer, Manufacturing Engineer, Electrical Engineer, Electronics Engineer, Sheet Metal Worker, CNC operator, Welder.

This qualification relates to:

- EAL Level 1 NVQ Certificate in Performing Engineering Operations
- EAL Level 2 NVQ Diploma in Performing Engineering Operations
- EAL Level 2 Certificates and Diplomas in Engineering Technology subjects, such as mechanical, electrical, welding, maintenance, and plumbing
- Further EAL level 2 engineering and manufacturing competence qualifications

Entry requirements

Learners must be at least 14 years old. There are no formal entry requirements for this qualification. However, 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 scheme, 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 unit, comprising an on-screen multiple-choice examination
- One of the pathways within the optional units, comprising Centre marked practical/theory assessments.

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.

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 in the external examination within the mandatory units and the centre marked assessments within the optional units.

Please refer to the Grading Criteria within the Delivery Packs and Assessment Packs on how to grade individual units.

How will it be assessed?

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

The on-screen multiple choice examination is set by EAL and marked by EAL. The internal assessment is 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.

Structure

This qualification will be obtained by the learner once they have successfully completed the **three mandatory units** and **one optional unit** from **one pathway** from the units listed below.

The qualification has 25 credits and 230 guided learning hours and 250 hours Total Qualification Time (TQT).

Mandatory units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|--|--------|-----|-------------|
| QET2/001A | Engineering environment awareness | 6 | 60 | L/507/0183 |
| QET2/002 | Engineering techniques | 6 | 60 | H/507/0187 |
| QET2/003 | Engineering mathematics and science principles | 6 | 60 | M/507/0838 |

Pathway QCET2A - Mechanical engineering technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|---|--------|-----|-------------|
| QET2/016 | Engineering materials processes | 7 | 50 | D/507/0222 |
| QET2/017 | Fitting and assembly techniques | 7 | 50 | A/507/0227 |
| QET2/018 | Manual turning techniques | 7 | 50 | M/507/0242 |
| QET2/018A | Manual milling techniques | 7 | 50 | K/507/0840 |
| QET2/019 | Computer numerical control turning techniques | 7 | 50 | F/507/0245 |
| QET2/020 | Computer numerical control milling techniques | 7 | 50 | L/507/0247 |
| QET2/021 | Grinding techniques | 7 | 50 | Y/507/0249 |
| QET2/034 | Understanding Computer Aided Drawing (CAD) | 7 | 50 | L/507/0264 |

Pathway QCET2B - Maintenance engineering technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|----------|--|--------|-----|-------------|
| QET2/013 | Engineering maintenance safety practices | 7 | 50 | T/507/0212 |
| QET2/014 | Engineering maintenance techniques | 7 | 50 | J/507/0215 |
| QET2/015 | Engineering maintenance planning | 7 | 50 | R/507/0217 |

Pathway QCET2C - Motor vehicle maintenance technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|----------|--|--------|-----|-------------|
| QET2/031 | Motor vehicle maintenance safety practices | 7 | 50 | T/507/0260 |
| QET2/032 | Motor vehicle maintenance techniques | 7 | 50 | A/507/0261 |
| QET2/033 | Motor vehicle maintenance planning | 7 | 50 | A/507/0325 |

Pathway QCET2D - Fabrication and welding technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|--|--------|-----|-------------|
| QET2/007 | Fabrication and welding principles | 7 | 50 | F/507/0195 |
| QET2/008 | Manual welding techniques | 7 | 50 | T/507/0324 |
| QET2/009 | Producing components from metal plate | 7 | 50 | R/507/0203 |
| QET2/010 | Producing components from sheet metal | 7 | 50 | T/507/0842 |
| QET2/010A | Sheet metalwork technology | 7 | 50 | Y/507/0204 |
| QET2/011 | Non-fusion thermal joining methods | 7 | 50 | T/507/0209 |
| QET2/012 | Thermal cutting techniques | 7 | 50 | J/507/0280 |
| QET2/034 | Understanding Computer Aided Drawing (CAD) | 7 | 50 | L/507/0264 |

Pathway QCET2E - Pipework systems mechanical engineering technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|---|--------|-----|-------------|
| QET2/011 | Non-fusion thermal joining methods | 7 | 50 | T/507/0209 |
| QET2/025 | Building services pipework fixing, bending and jointing methods | 7 | 50 | H/507/0254 |
| QET2/025a | Building services engineering pipework fabrication processes and techniques | 7 | 50 | F/507/0293 |
| QET2/026 | Building services pipework systems | 7 | 50 | K/507/0255 |
| QET2/026a | Building services engineering systems and their layout requirements | 7 | 50 | K/507/0269 |

Pathway QCET2F - Electrical and electronics technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|----------|--|--------|-----|-------------|
| QET2/004 | Electrical and electronic principles | 7 | 50 | T/507/0839 |
| QET2/005 | Electrical and electronic testing methods | 7 | 50 | K/507/0191 |
| QET2/006 | Electrical and electronic systems and devices | 7 | 50 | R/507/0279 |
| QET2/022 | Personal computer (PC) maintenance methods | 7 | 50 | L/507/0250 |
| QET2/023 | Electrical installation methods, wiring and circuit protection | 7 | 50 | R/507/0282 |
| QET2/024 | Basic electrical circuit inspection, testing and fault diagnosis | 7 | 50 | M/5070841 |

Pathway QCET2G - Electrical/electronic security systems and devices technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|----------|--------------------------------------|--------|-----|-------------|
| QET2/004 | Electrical and electronic principles | 7 | 50 | T/507/0839 |
| QET2/029 | Installation of security systems | 7 | 50 | A/507/0258 |
| QET2/030 | Security installation design | 7 | 50 | F/507/0259 |

Pathway QCET2H - Engineering technology

Optional units - select ONE of the following units:

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|--|--------|-----|-------------|
| QET2/004 | Electrical and electronic principles | 7 | 50 | T/507/0839 |
| QET2/005 | Electrical and electronic testing methods | 7 | 50 | K/507/0191 |
| QET2/006 | Electrical and electronic systems and devices | 7 | 50 | R/507/0279 |
| QET2/007 | Fabrication and welding principles | 7 | 50 | F/507/0195 |
| QET2/008 | Manual welding techniques | 7 | 50 | T/507/0324 |
| QET2/009 | Producing components from metal plate | 7 | 50 | R/507/0203 |
| QET2/010 | Producing components from sheet metal | 7 | 50 | T/507/0842 |
| QET2/010A | Sheet metalwork technology | 7 | 50 | Y/507/0204 |
| QET2/011 | Non-fusion thermal joining methods | 7 | 50 | T/507/0209 |
| QET2/012 | Thermal cutting techniques | 7 | 50 | J/507/0280 |
| QET2/013 | Engineering maintenance safety practices | 7 | 50 | T/507/0212 |
| QET2/014 | Engineering maintenance techniques | 7 | 50 | J/507/0215 |
| QET2/015 | Engineering maintenance planning | 7 | 50 | R/507/0217 |
| QET2/016 | Engineering materials processes | 7 | 50 | D/507/0222 |
| QET2/017 | Fitting and assembly techniques | 7 | 50 | A/507/0227 |
| QET2/018 | Manual turning techniques | 7 | 50 | M/507/0242 |
| QET2/018A | Manual milling techniques | 7 | 50 | K/507/0840 |
| QET2/019 | Computer numerical control turning techniques | 7 | 50 | F/507/0245 |
| QET2/020 | Computer numerical control milling techniques | 7 | 50 | L/507/0247 |
| QET2/021 | Grinding techniques | 7 | 50 | Y/507/0249 |
| QET2/022 | Personal computer (PC) maintenance methods | 7 | 50 | L/507/0250 |
| QET2/023 | Electrical installation methods, wiring and circuit protection | 7 | 50 | R/507/0282 |
| QET2/024 | Basic electrical circuit inspection, testing and fault diagnosis | 7 | 50 | M/5070841 |

Pathway QCET2H - Engineering technology (continued)

Optional units -

| Unit | Unit title | Credit | GLH | Ofqual Code |
|-----------|---|--------|-----|-------------|
| QET2/025 | Building services pipework fixing, bending and jointing methods | 7 | 50 | H/507/0254 |
| QET2/025a | Building services engineering pipework fabrication processes and techniques | 7 | 50 | F/507/0293 |
| QET2/026 | Building services pipework systems | 7 | 50 | K/507/0255 |
| QET2/026a | Building services engineering systems and their layout requirements | 7 | 50 | K/507/0269 |
| QET2/027 | Installation and servicing of refrigeration equipment | 7 | 50 | M/507/0256 |
| QET2/028 | Installation and servicing of air-conditioning equipment | 7 | 50 | T/507/0257 |
| QET2/029 | Installation of security systems | 7 | 50 | A/507/0258 |
| QET2/030 | Security installation design | 7 | 50 | F/507/0259 |
| QET2/031 | Motor vehicle maintenance safety practices | 7 | 50 | T/507/0260 |
| QET2/032 | Motor vehicle maintenance techniques | 7 | 50 | A/507/0261 |
| QET2/033 | Motor vehicle maintenance planning | 7 | 50 | A/507/0325 |
| QET2/034 | Understanding Computer Aided Drawing (CAD) | 7 | 50 | L/507/0264 |
| QET2/035 | Applied mathematics in engineering | 7 | 50 | R/507/0265 |
| QET2/036 | Business improvement techniques | 7 | 50 | Y/507/0266 |
| QET2/037 | Leading a team in engineering | 7 | 50 | D/615/0467 |
| QET2/038 | Plan and carry out a project in engineering | 7 | 50 | Y/615/0466 |
| QET2/039 | Engineering manufacturing techniques | 7 | 50 | H/615/0471 |
| QET2/040 | Engineering design techniques | 7 | 50 | A/615/0475 |
| QET2/041 | Marketing an engineering product | 7 | 50 | J/615/0477 |
| QET2/042 | Additive manufacturing (3D printing) | 7 | 50 | R/615/0482 |