

Qualification Manual

EAL Level 3 Certificate in Fabrication and
Welding Engineering Technology (QCF)

QUALIFICATION CODE: 501/1114/0

ISSUE: 1

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1.0 About EAL

Since 1964, **EAL (EMTA Awards Limited)** has been awarding superior vocational qualifications and apprenticeship components for engineering, building services and related sectors.

Developed to the highest technical standard, our qualifications are regularly updated to reflect regulatory and technical changes. We support the providers of our qualifications with an unparalleled level of service to ensure that learners are well prepared for the roles they plan to take on.

EAL recognise the value of skills in the work environment as one of the 5 key drivers of productivity; essential for economic growth and bringing a number of wider social benefits. Through its programme of continuous improvement EAL strives to meet the demand from employers for high performing, high quality products.

For further information please contact EAL Customer Services +44(0)870 240 6889 or visit www.eal.org.uk.

2.0 Introduction to the Qualification

What is this qualification?

This qualification focuses on practical skills and knowledge. This ensures that when the learner completes the qualification they will have gained practical experience and some expectation of some of the situations that they could face in a job role within the engineering sector. It covers the advanced level knowledge and understanding of fabrication and welding engineering and has been developed in consultation with colleges, training associations and industry to ensure that it meets the needs of the engineering sector. This qualification does not require occupational evidence. The EAL Centre Operations Manual **must** be adhered to in the delivery of this qualification.

Who is this qualification for?

- Learners who may have a limited prior knowledge and understanding of the engineering sector but have the ability to achieve an advanced level engineering qualification
- Those who wish to progress in the engineering sector
- Learners who are thinking about engineering as a career but who would like some experience of the job role first
- Those who are new to the industry or looking for a career change or wish to learn new skills.

What does this qualification cover?

The qualification covers two mandatory units: Engineering and Environmental Health and Safety, and Engineering Organisational Efficiency and Improvement. The learner can then select one, from a range of advanced fabrication and welding engineering units. See [Section 3](#) for further details

2.1 Accreditation & Industry Support for this Qualification

This qualification:

- Is accredited by Ofqual at level three.

This manual will be updated to reflect apprenticeship frameworks as more information from Semta becomes available.

2.2 Achievement of the Qualification & ‘Stand Alone Units’

This qualification is gained when all the necessary units have been achieved. The centre will then be able to apply for the learner’s Certificate. The learner will also receive a Certificate of Unit Credit, listing all the units they have achieved.

However if they don’t manage to complete the full qualification learners can still claim a Certificate of Unit Credit for the units achieved therefore, they still have proof of their ability and could complete the qualification at a later date.

Units can also be taken individually (stand alone). This manual *must be* used in conjunction with the delivery and assessment of any individual units to ensure that assessment requirements and methodologies are consistently applied.

2.3 Relation to Other Qualifications

This qualification relates to:

- EAL Qualifications in Key Skills, Functional Skills and Essential Skills Wales,
- EAL L1 Certificate in Performing Engineering Operations (QCF)
- EAL L1 Certificate in Arc Welding
- EAL L2 Certificate in Positional Welding
- EAL L2 Diploma in Performing Engineering Operations (QCF)
- EAL L2 & L3 NVQ in Fabrication And Welding Engineering

Details on these can be obtained from the EAL Website or alternatively contact:

- EAL Customer Services
Tel: +44 (0)870 240 6889
Email: customercare@eal.org.uk

2.4 Qualification Support Materials

The following materials are available for this qualification:

- **Qualification Units:**
These documents contain the knowledge and/or the practical assessment criteria. They also contain delivery advice, and all the centre assessment material (internal assessments). Where a unit has an externally set exam, this will be indicated on the unit. The units also clearly identify the:
 - [QCF level & Credit value](#)
 - Guided learning hours (GLH)
 - Title, Unit purpose/aims
 - Summary of learning outcomes.
- **Learner packs:**
These are designed to assist the delivery staff in administration of the internal assessments.

EAL have also provided for centres:

- EAL Centre Operations Manuals - This sets out the requirements for EAL Centres, contains all necessary documentation and also contains helpful teaching and delivery advice. The EAL Centre Operations Manual **must** be adhered to in the delivery of this qualification.

All these materials can be accessed from the EAL Website www.eal.org.uk. Note: Further delivery support materials will be available in the future for this qualification.

2.5 Funding for this Qualification

The following bodies will be able to assist you with your funding queries.

For England:

- Skills Funding Agency.
<http://skillsfundingagency.bis.gov.uk/>
Cheylesmore House
Quinton Road
Coventry
CV1 2WT
- Also, search the Learning Aims Database (LAD) for the qualification code given on the front page of this Manual; this will give an indication of the funding status.

For Wales:

- Contact the
Welsh Assembly Government
<http://wales.gov.uk/topics/educationandskills/?lang=en>
Cathays Park
Cardiff
CF10 3NQ

For Northern Ireland:

- Contact the
Department for Employment and Learning
<http://www.delni.gov.uk/>
Adelaide House
39-49 Adelaide Street
Belfast
BT2 8FD

For all Nations and further guidance:

- Contact Senta
14 Upton Road
Watford
WD18 0JT
Tel: 01923 238441

2.6 Employer Training Resource for this Qualification

If you are an employer and you require details of training for this qualification contact the National Skills Academy for Manufacturing, which exists to provide the sector with the training it needs to stay world-class.

The Skills Academy has approved a range of high quality training products and services designed to deliver bottom line business benefits to employers. These are delivered via a network of providers who have themselves been approved, undergoing rigorous ongoing checks and continued professional development against the Skills Academy standard. Learn more about the Skills Academy's training products and services by clicking onto: http://www.nsa-m.co.uk/products_and_services.aspx

3.0 Rule of Combination (Qualification Structure)

This qualification will be achieved when the learner has successfully completed the common mandatory units followed by the required number of optional units.

Mandatory Units: *Both units must be completed:*

EAL Code	Unit Title	Level	Credit	Guided Learning Hours	Ofqual Code
QETA/001	<input type="checkbox"/> Engineering and Environmental Health and Safety	3	9	75	T/602/0551
QETA/002	<input type="checkbox"/> Engineering Organisational Efficiency and Improvement	3	9	75	J/602/0554

Optional Units: *Select one of the following units:*

QETA/016	<input type="checkbox"/> Fabrication and Welding Principles	3	10	75	K/602/0577
QETA/017	<input type="checkbox"/> Pattern Development Methods	3	10	75	T/602/0579
QETA/018	<input type="checkbox"/> Manual Metal-Arc (MMA) Welding	3	10	75	T/602/0582
QETA/019	<input type="checkbox"/> Metal Inert Gas/Metal Active Gas (MIG/MAG) Welding	3	10	75	A/602/0583
QETA/020	<input type="checkbox"/> Tungsten Inert Gas (TIG) Welding	3	10	75	F/602/0584
QETA/021	<input type="checkbox"/> Mechanised Welding Processes	3	10	75	J/602/0585
QETA/022	<input type="checkbox"/> Automated Welding Processes	3	10	75	L/602/0586
QETA/023	<input type="checkbox"/> Producing Sheetmetal Fabrications	3	10	75	R/602/0587
QETA/024	<input type="checkbox"/> Producing Plate Fabrications	3	10	75	Y/602/0588
QETA/025	<input type="checkbox"/> Producing Pipework Fabrications	3	10	75	D/602/0589
QETA/026	<input type="checkbox"/> Managing Fabrication Activities	3	10	75	R/602/0590
QETA/027	<input type="checkbox"/> Shipbuilding Operations	3	10	75	H/602/0593

4.0 Centre & Qualification Approval

Centres wishing to run the qualification will need to comply with this Qualification Manual and EAL's centre approval criteria for this qualification. Centres must also put in place the appropriate physical and human resources and administration systems to effectively run the qualification.

Note: For centres that already have the NQF qualification on their centre remit they will automatically have approval to run this QCF qualification.

For *existing* EAL Centres to put the qualification on your centre remit:

- The approval form can be downloaded from the centre area of the EAL Website or alternatively obtained from the EAL Centre Operations Manual. Please contact your EV, or EAL Customer Services (see below) if you need any assistance.

For *non* EAL Centres to gain centre approval to run the qualification:

- Please contact the EAL Customer Services Department who will be delighted to hear from you:
Tel: +44 (0)870 240 6889
Fax: +44 (0)870 240 6890
Email: customercare@eal.org.uk

5.0 Profiles & Requirements

The EAL Centre Operations Manual **must** be followed along with this section.

5.1 Teaching Staff

Teaching staff must:

- Have 2 years experience in teaching/training
or
- Are working towards an appropriate teaching/training qualification (e.g. Cert Ed or Learning & Development trainer units)
or
- Hold an appropriate teaching/training qualification (e.g. Cert Ed or Learning & Development trainer units)

Must also have:

- Knowledge and understanding of the occupation covered by this qualification
- Knowledge and understanding of the structure and content of this qualification.

5.2 Assessors

Assessors must:

- Have 2 years experience in assessment (e.g. within an N/SVQ or teaching/training environment)
or
be working towards an appropriate assessment qualification (e.g. A1/A2)
or
hold an appropriate assessment qualification (e.g. A1/A2)
- Have knowledge and understanding of the occupation covered by the VRQ
- Have knowledge and understanding of the VRQ's structure and content.

5.3 Quality Assurance Staff

Quality assurance staff must:

- Have experience in quality management/internal verification
or
hold an appropriate qualification (e.g. V1)
- Have familiarity of the occupation covered by the qualification
- Have knowledge and understanding of the qualification's structure and content.

5.4 Personnel Conducting the External Assessment

These personnel must:

- Have experience in conducting and controlling exam sessions
or
be supervised, conducting this function, by an individual experienced in conducting and controlling exam sessions
- Have knowledge, understanding and compliance to EAL examination procedures (see the EAL Centre Operations Manual)

5.5 Learners

There are no formal entry requirements for this qualification; although Centres should ensure that the learners have the potential to achieve the units selected within this qualification. Learners must have the minimum levels of literacy and numeracy to comply with the health and safety aspects of the scheme, the completion of the learning outcomes and the external assessment.

Centres should make candidates with particular requirements aware of the practical and theory content of the qualification and they should be given every opportunity to complete all or some of the units. 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.

Age Restrictions

There are no age restrictions.

5.6 Physical Resources

The resources required for the assessments are detailed in each of the qualification units.

6.0 Assessment

The assessment of this qualification has two aspects – internal (centre marked) assessments and an external (EAL marked) exam. The learner must pass all the internal assessments and the external assessment of their chosen units to achieve the qualification. EAL will monitor and externally verify both forms of assessment. The two common mandatory units will be only subject to external assessment (see below). The remaining units will only be subject to internal assessment. The EAL Centre Operations Manual **must** be adhered to in the delivery of this qualification.

6.1 External (EAL Marked) Assessment

This is an on-screen examination, which assesses the knowledge and understanding relevant to the two common mandatory units as follows:

QETA/001	<input type="checkbox"/>	Engineering and Environmental Health and Safety
QETA/002	<input type="checkbox"/>	Engineering Organisational Efficiency and Improvement

Exam Specification		
Number of questions: 40 Time allowed: 60 mins Pass mark: 60% (not graded)		
LO °	LO Title	N° of Questions/sub groups covering each learning outcome
1.1	Understand Health and Safety Roles and Responsibilities	6
1.2	Understand the Application of Health & Safety in the Engineering Environment	5
1.3	Understand the Safe Moving and Storing of Materials	5
1.4	Understand Environmental Management	5
2.1	Understand Production Activities	5
2.2	Understand Application of Quality Control and Quality Assurance	6
2.3	Understand Organisational Improvement Techniques and Competitiveness	5
2.4	Understand Personnel Rights and Responsibilities within an Organisation	3

Key Points:

- Learners must be registered for the external assessment component with EAL a specified number of days before the test date to allow for printing and dispatch of papers (refer to the EAL Procedures for Conducting an External Assessment).
- The examination must be undertaken by the learner under controlled conditions as specified by in EAL's procedures for External Assessment contained within the Centre Operations Manual.
- This exam is available on demand and result release will be within in 24 hours.
- The external assessment must be delivered and invigilated by the centre in line with EAL's external assessment procedures.
- EAL's Centre Co-ordinator will assume responsibility for liaison and correspondence regarding the external assessment component.
- Centres will be sampled by EAL to ensure the tests are delivered in accordance with EAL instructions.

6.2 Internal (Centre Marked) Assessment

Internal assessments test the practical skills and knowledge of the learners within the units and to a very limited extent within the common mandatory units. They are centre marked by members of the delivery team.

Internal assessment involves collecting and evaluating evidence that demonstrates achievement of the learning outcomes. This will be subject to external verification. Centres are responsible for ensuring that assessment decisions are valid and reliable

Where the assessment take the form of written/short answer and multiple choice question papers, these should be treated as a formal assessment therefore imposing the necessary restrictions on the learner e.g. no conferring or referring to text books etc.

Guidance sheets have been created to hand out to the learners, to ensure they are aware how to complete the multiple choice and short answer questions papers and how to amend their answers if necessary.

The internal assessments are accompanied by marking criteria, checklists and other assessment material to ensure that the delivery team is consistent amongst learners with assessments. The internal assessments and the accompanying marking/assessment criteria can be found in the individual units.

It is advised that the learner's produce a logbook/portfolio where they can file and make reference to evidence that shows their achievements against the learning outcomes.

All learning outcomes of the qualification must 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. These records along with the learner logbooks must be available to the EAL External Verifier.

Assessment guidance is provided within each unit.

Appendix 1: Qualification & Credit Framework (QCF)

This is the framework for creating and accrediting qualifications in England, Wales and Northern Ireland. Assessment routes within this qualification have a level and credit. The level is indicative of the challenge. The credit value specifies the number of credits that will be awarded to a learner who successfully achieves the assessment route. One credit is equal to 10 hours of learning time. Learning time is defined as the total time taken by the average learner at this level to fully complete the learning outcomes and assessment requirements of a unit. This includes the guided learning hours (GLH) in the classroom/workshop as well as any direct study, homework, practice, preparation and assessment.

QCF Requirements for Centres

The QCF has requirements for centres in relation to the information provided to the relevant funding bodies. Centres will need to:

- Register the centre with the UK Register of Learning Providers (UKRLP) to obtain a UK Provider Reference Number (UKPRN)
- Become a Learner Registering Body (LRB). This will ensure that every individual 'centre reference number' or UKPRN will be identifiable on one system which is the UKRLP.
- Obtain or confirm Unique Learner Numbers (ULNs) for Learners through the Learner Registration Service (LRS).

The ULN will be issued from and held on the Learner Registration Service (LRS). This number will enable credit accumulation and transfer of learner achievement, and will create a Learner Record. The use of the ULN is mandated by government funding bodies. The ULN may not be applicable for all learners, for example if the learner is not a UK national. The ULN relates to England, Wales and Northern Ireland only. Scotland has a similar number, the Scottish Candidate Number (SCN).

Further details of the ULN and LRS can be obtained from the Learner Records Service.

If you have any further queries or concerns please visit the EAL Website www.eal.org.uk. or contact our Customer Services department who can assist you.

Appendix 2: Functional Skills & Essential Skills Wales

Essential Skills Wales (ESW)

Essential skills Wales are a suite of qualifications to replace Key Skills in Wales. There are currently three ESW qualifications:

- Application of number (Aon),
- Communication,
- Information communication technology (ICT).

EAL offer these qualifications at levels one to three. These qualifications are 'stand alone' and are portfolio based; however these can be embedded into other qualifications but must remain a transferable skill.

DCELLS are currently reviewing Working with Others; Improving Ones own Learning and Problem Solving which will become part of a suite of six qualifications along with Application of Number, Communication and Information Communication Technology. These qualifications will available from September 2010. Currently the wider Key Skills are available until September 2012.

For further information essential skills Wales please visit the EAL website

Functional skills

If individuals don't achieve a level two functionality while at school; they will have other opportunities to do so at college, within an apprenticeship, or in an adult course on day release from work, whatever their age.

Functional Skills qualifications will replace existing Key Skills qualifications.

Functional Skills qualifications will be:

- a constituent of new Diplomas at every level,
- a replacement for Communication, AoN and ICT Key Skills qualifications part of Apprenticeship Frameworks
- part of Foundation Learning.

Each qualification is separate and assessed independently. The qualifications have been designed so that, at level two, learners are able to apply their skills confidently in a range of different contexts.

Functional Skills are already part of the Qualifications and Credit Framework (QCF) and have been allocated a credit value of five at the two Levels.

They will be accredited onto the National Qualifications Framework (NQF) for full rollout from September 2010.

For further information on functional skills and essential skills Wales and please visit the EAL website at www.eal.org.uk/

Appendix 3: Potential Sources of Teaching Information

There are a number of books CD ROMs, videos and web sites, which provide useful sources of teaching information to support this qualification. If you wish to suggest a publication, please contact:

Customercare@eal.org.uk

Common Mandatory Units

Title	Author	Publisher	ISBN
Engineering Materials: An Introduction to their Properties and Applications	Michael Ashby & David R.H Jones	Butterworth-Heinemann	0750630817

Web Sites

<http://www.croner-uk.co.uk/>

<http://www.environment-agency.gov.uk>

<http://www.healthandsafety.co.uk>

<http://www.iso.ch>

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

Title	Author	Publisher	ISBN
Technology of Engineering Materials	William Bolton & Mathew Philip	Butterworth-Heinemann	0750656433
Workshop Processes, Practices and Materials	Bruce Black	Butterworth-Heinemann	0340692529

Appendix 4: Relation to National Occupational Standards

EAL's QETA & QETP Units are mapped to national occupational standards as shown:

EAL Code	Details of the relationship between the unit and relevant national occupational standards or other professional standards or curricula	EAL Code	Details of the relationship between the unit and relevant national occupational standards or other professional standards or curricula
QETP/001	045NEMI1, 045NEMI 2	QETA/028	O45NEM6
QETA/001	O45NMME2.01	QETA/029	O45NEM6
QETA/002	O45NMME2.01	QETA/030	O45NEM6
QETP/002	045NEEE34, 045NEEE36, 045NEM12-13	QETA/031	O45NEM6
QETP/003	045NFEW2.04, 045NFEW2.38, 045NFEW2.24, 045NFEW2.30, 045NFEW2.33	QETA/032	O45NEM41
QETP/004	045NFEW2.04, 045NFEW2.38, 045NFEW2.24, 045NFEW2.30, 045NFEW2.33	QETA/033	O45NEM20
QETP/005	045NEM16	QETA/034	O45NEM20
QETP/006	045NET9, 045NET39, 045NET42	QETA/035	O45NEM20
QETP/007	045NET39, 045NET9	QETA/036	O45NEM11
QETP/008	045NET9, 045NET39, 045NET42	QETA/037	O45NEM40
QETP/009	045NET9, 045NET45	QETA/038	O45NIC06
QETA/003	Common to all units and across all NOS from engineering suites	QETA/039	O45NETS3-56
QETA/004	O45NEEE06	QETA/040	O45NENGM5_05
QETA/005	Common to all units and across all NOS from engineering suites	QETA/041	O45NMME3.31, O45NMME3.51
QETA/006	O45NETS3-05	QETA/042	O45NETS3-51
QETA/007	O45NMME3.30, O45NMME3.31	QETA/043	O45NENGM5_05
QETA/008	O45NEEE19	QETA/044	O45NMME3.23
QETA/009	O45NEEE06	QETA/045	O45NMME3.13
QETA/010	O45NETS3-32	QETA/046	O45NMME3.09
QETA/011	O45NETS3-18	QETA/047	O45NMME3.05
QETA/012	O45NEEE05	QETA/048	O45NMME3.21
QETA/013	O45NEEE05	QETA/049	O45NMME3.31, O45NMME3.51
QETA/014	O45NETS3-33	QETA/050	O45NEEE17
QETA/015	O45NEEE34	QETA/051	O45NAE3-195
QETA/016	O45NFEW3_60, O45NFEW3.26	QETA/052	O45NAE3-195
QETA/017	O45NFEW3.27	QETA/053	O45NAE3-168
QETA/018	O45NFEW3.4	QETA/054	O45NAE3-164
QETA/019	O45NFEW3.5	QETA/055	O45NAE3-168
QETA/020	O45NFEW3.6	QETA/056	O45NAE3-195
QETA/021	O45NFEW3.10, O45NFEW3.16	QETA/057	O45NAE3-082
QETA/022	O45NFEW3.10, O45NFEW3.16	QETA/058	O45NEM3-63
QETA/023	O45NFEW3.25	QETA/059	O45NEM3-64
QETA/024	O45NFEW3.38	QETA/060	O45NEM3-70
QETA/025	O45NFEW3.45	QETA/061	O45NEEE05
QETA/026	O45NFEW3_61	QETA/062	045NEEE32, 045NEEE33
QETA/027	O45NFEW3.38, O45NFEW3_61	QETA/063	045NEEE30, 045NEEE32, 045NEEE17

Appendix 5: Learner Registration & Certification

Learners must be registered with EAL on a code which relates to the qualification -this **must be** completed prior to assessment. Both learner registration and certification can be completed on line at the EAL Website www.eal.org.uk. For paper based registration and certification use forms CRF1, and CRF1A. These are located in the centre operations manual.

To Register the Learner on the Chosen Qualification/Pathway Code:

Qualification Title	Code
EAL Level 3 Certificate in Fabrication and Welding Engineering Technology (QCF)	501/1114/0

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Requests should be made in writing and addressed to:
Product Development, EAL (EMTA Awards Limited),
3365 Century Way, Thorpe Park, Leeds LS15 8ZB.