



Level 2 NVQ Diploma in Performing Engineering Operations (Northern Ireland)

ENGINEERING

Qualification Specification

Overview

This qualification covers the fundamental skills and knowledge common to all engineering practices. It offers an extensive choice and flexibility for learners to demonstrate competence in one or more of a broad variety of engineering activities. The qualification also caters for those providing technical support, including project planning and contributing to business improvement.

Typical Job

The qualification is applicable to a wide variety of engineering occupations within the sector, dependent on the pathway chosen.

Qualification code:	603/4864/1
Level:	2
Total qualification time:	400
Guided learning hours:	Min 214 – Max 340
Credits:	Min 40 – Max 64
Minimum age:	Pre-16, 16+

Issue 1.0



Purpose of the qualification

This qualification is a National Vocational qualification (NVQ). It involves the skills and knowledge needed to do the job, ability to organise work and identify and prevent problems. NVQs are based on national occupational standards, which the learner must meet to be competent in a particular task. The achievement of NVQs will encourage an employee to value their contribution to the workplace, and it will develop their skills and potential.

What does this qualification cover?

This qualification covers the fundamental skills and knowledge common to all engineering practices, including health and safety requirements and communicating engineering information. It offers an extensive choice and flexibility for learners to demonstrate competence in one or more of a broad variety of engineering activities. The qualification also caters for those providing technical support, including project planning and contributing to business improvement.

Who is this qualification for?

This qualification is for:

- Individuals who need to acquire engineering competencies in a realistic, sheltered and controlled environment such as that offered by schools, colleges, training providers, company training centres, HM Prison Services and the MOD training workshops. This will then enable a safe progression into the workplace/employment.
- Individuals employed in engineering but require additional engineering competencies as part of an existing job role or to enable career progression
- Learners undertaking SEMTA apprenticeship frameworks

How is the qualification delivered?

PEO can be delivered in the workplace (in a sheltered environment) or at a Centre through workshop activities etc. There is no exam. PEO is also the foundation into other engineering qualifications and gives learners an insight to engineering.

Who supports this qualification?

This qualification is:

- Accredited by CCEA (Northern Ireland) at Level 2
- Endorsed by a number of post-16 providers as facilitating progression to a range of Engineering Apprenticeships or a range of post-16 learning programmes at level 2 and 3.

What could this qualification lead to?

Performing Engineering Operations at Level 2 forms a major component of SEMTA's Engineering Apprenticeship Framework and allows progression onto a variety of other Level 3 Engineering related qualifications. Further information about apprenticeships and industry recognised qualifications in the engineering sector can be obtained from the EAL website.

Entry Requirements

There are no entry requirements for the PEO assessment routes unless this is a legal requirement of the process or the environment. Assessment is open to any learner who has the potential to reach the assessment requirements set out in the relevant assessment routes.

How is the qualification achieved?

This qualification can be obtained by following only **one of two** pathways that include: **Engineering Practices** or **Technical Support**.

Learners following the Engineering Practices pathway must complete the **three** Mandatory units, plus **three** more of the Optional units.

Learners following the Technical Support pathway must complete the **three** Mandatory units plus **five** more of the Optional units.

What will be assessed?

This qualification is made up of both mandatory and optional 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.

How will it be assessed?

The qualification is assessed by:

- holistic assessment
- portfolio of evidence (could be electronic)
- verbal questioning
- witness testimony
- knowledge and understanding

The PEO assessment routes are intended to have a wide application throughout the engineering sector. It is necessary therefore to have a flexible approach to the environment in which the assessment routes are delivered and assessed. There will be learners who have been working in an industry for some time and wish to acquire a broad range of basic competencies as part of an existing job role or to enable career progression. The PEO assessment routes will satisfy that need.

NVQ Units

This qualification is made up of a number of nationally recognised units which EAL has converted into assessment material called 'assessment routes'. These documents allow both the learner and the assessor to record the progress through the NVQ qualification. The units contain the performance to be assessed, the knowledge to be assessed and the evidence required from the learner to demonstrate their competence.

All units in these qualifications contain the following information:

- qualification and unit title
- unit level
- unit summary
- performance to be assessed and evidenced (assessment criteria)
- knowledge to be assessed and evidenced (knowledge requirements)

Structure

This qualification can be obtained by following either one of two pathways, Engineering Practices or Technical Support.

Mandatory units: (to be completed for each pathway)

EAL code	Title	Level	Credit	GLH
QPE02/001	Working Safely in an Engineering Environment	2	5	33
QPE02/002	Carrying out Engineering Activities Efficiently and Effectively	2	4	29
QPE02/003	Using and Communicating Technical Information	2	4	29

Pathway QPEA: Engineering Practices

Optional assessment routes: learners must complete the **three** mandatory units **plus three** more assessment routes units from the following

Notes:

Only one unit from **4, 32** and **61** may be included in the learner's choice of **three** units.

If unit **65** is selected units **5, 6, 8, 11, 12, 15, 16, 17** cannot be included in the learner's choice of **three** units.

If unit **66** is selected units **10, 22, 23, 25, 26, 27, 28, 29, 30, 34** cannot be included in the learner's choice of **three** units.

If unit **67** is selected units **33, 35, 36, 40** cannot be included in the learner's choice of **three** units.

If unit **68** is selected units **19, 21, 37, 38, 39, 40, 58, 59** cannot be included in the learner's choice of **three** units

EAL code	Title	Level	Credit	GLH
QPE02/004	Producing Mechanical Engineering Drawings using a CAD System	2	11	61
QPE02/005	Producing Components using Hand Fitting Techniques	2	14	64
QPE02/006	Producing Mechanical Assemblies	2	15	68
QPE02/007	Forming and Assembling Pipework Systems	2	14	64
QPE02/008	Carrying Out Aircraft Detail Fitting Activities	2	14	64
QPE02/009	Installing Aircraft Mechanical Fasteners	2	11	61
QPE02/010	Producing Aircraft Detail Assemblies	2	14	65
QPE02/011	Preparing and Using Lathes for Turning Operations	2	15	68
QPE02/012	Preparing and Using Milling Machines	2	15	68
QPE02/013	Preparing and Using Grinding Machines	2	15	68

All the material in this publication is copyright

© Excellence, Achievement & Learning Limited 2017

QPEO2/014	Preparing and Proving CNC Machine Tool Programs	2	14	64
QPEO2/015	Preparing and Using CNC Turning Machines	2	14	64
EAL code	Title	Level	Credit	GLH
QPEO2/016	Preparing and Using CNC Milling Machines	2	14	64
QPEO2/017	Preparing and Using CNC Machining Centres	2	14	64
QPEO2/018	Preparing and Using Industrial Robots	2	14	64
QPEO2/019	Maintaining Mechanical Devices and Equipment	2	14	64
QPEO2/020	Assembling and Testing Fluid Power Systems	2	14	64
QPEO2/021	Maintaining Fluid Power Equipment	2	14	64
QPEO2/022	Producing Sheet Metal Components and Assemblies	2	14	64
QPEO2/023	Producing Platework Components and Assemblies	2	14	64
QPEO2/024	Cutting and Shaping Materials using Thermal Cutting Equipment	2	14	64
QPEO2/025	Preparing and Proving CNC Fabrication Machine Tool Programs	2	14	64
QPEO2/026	Preparing and Using CNC Fabrication Machinery	2	14	64
QPEO2/027	Preparing and Using Manual Metal Arc Welding Equipment	2	15	68
QPEO2/028	Preparing and Using Manual TIG or Plasma-arc Welding Equipment	2	15	68
QPEO2/029	Preparing and Using Semi-automatic MIG, MAG and Flux cored arc Welding equipment	2	15	68
QPEO2/030	Preparing and Using Manual Oxy/fuel Gas Welding Equipment	2	14	64
QPEO2/031	Preparing and Using Manual Flame Brazing and Braze Welding Equipment	2	11	61
QPEO2/032	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61
QPEO2/033	Wiring and Testing Electrical Equipment and Circuits	2	14	64
QPEO2/034	Forming and Assembling Electrical Cable Enclosure and Support Systems	2	13	65
QPEO2/035	Assembling, Wiring and Testing Electrical Panels/Components Mounted in enclosures	2	14	64
QPEO2/036	Assembling and Testing Electronic Circuits	2	14	64
QPEO2/037	Maintaining Electrical Equipment/Systems	2	15	68
QPEO2/038	Maintaining Electronic Equipment/Systems	2	15	68
QPEO2/039	Maintaining and Testing Process Instrumentation and Control Devices	2	15	68
QPEO2/040	Wiring and Testing Programmable Controller Based Systems	2	15	68
QPEO2/041	Using Wood for Pattern, Model Making and Other Engineering Applications	2	15	68
QPEO2/042	Assembling Pattern, Model and Engineering Woodwork Components	2	14	64
QPEO2/043	Producing Composite Mouldings using Wet Lay-up Techniques	2	14	64
QPEO2/044	Producing Composite Mouldings using Pre-Preg Techniques	2	14	64

All the material in this publication is copyright

© Excellence, Achievement & Learning Limited 2017

QPEO2/045	Producing Composite Mouldings using Resin Flow Infusion Techniques	2	14	64
QPEO2/046	Producing Composite Assemblies	2	14	64
QPEO2/047	Producing Components by Rapid Prototyping Techniques	2	11	61
QPEO2/048	Producing and Preparing Sand Moulds and Cores for Casting	2	14	64
QPEO2/049	Producing and Preparing Molten Materials for Casting	2	14	64
EAL code	Title	Level	Credit	GLH
QPEO2/050	Producing Cast Components by Manual Means	2	13	65
QPEO2/051	Fettling, Finishing and Checking Cast Components	2	11	61
QPEO2/052	Finishing Surfaces by Applying Coatings or Coverings	2	9	41
QPEO2/053	Finishing Surfaces by Applying Treatments	2	9	41
QPEO2/054	Carrying Out Heat Treatment of Engineering Materials	2	9	41
QPEO2/055	Carrying Out Hand Forging of Engineering Materials	2	9	41
QPEO2/056	Stripping and Rebuilding Motorsport Vehicles (Pre-Competition)	2	14	64
QPEO2/057	Inspecting a Motorsport Vehicle During a Competition	2	14	64
QPEO2/058	Diagnosing and Rectifying Faults on Motorsport Vehicle Systems (During a Competition)	2	15	68
QPEO2/059	Carrying Out Maintenance Activities on Motorsport Vehicle Electrical Equipment	2	15	68
QPEO2/060	Stripping and Rebuilding Motorsport Engines (Pre – Competition)	2	14	64
QPEO2/061	Producing CAD Models (Drawings) using a CAD System	2	11	61
QPEO2/065	General Machining, Fitting and Assembly Applications	2	12	55
QPEO2/066	General Fabrication and Welding Applications	2	12	55
QPEO2/067	General Electrical and Electronic Engineering Applications	2	12	55
QPEO2/068	General Maintenance Engineering Applications	2	12	55
QPEO2/069	Joining Public Service Vehicle Components by Mechanical Processes	2	11	61
QPEO2/070	Assembling Structural Sub Assemblies to Produce a Public Service Vehicle	2	14	64
QPEO2/071	Fitting Sub Assemblies and Components to Public Service Vehicles	2	14	64
QPEO2/072	Preparing and Maneuvering Armoured Fighting Vehicles (AFVs) for Maintenance and Transportation	2	14	64
QPEO2/073	Producing Composite Mouldings using Resin Film Infusion Techniques	2	14	64

(Continued on next page)

Pathway QPEB: Technical Support

Mandatory units: (to be completed for each pathway)

EAL code	Title	Level	Credit	GLH
QPE02/001	Working Safely in an Engineering Environment	2	5	33
QPE02/002	Carrying out Engineering Activities Efficiently and Effectively	2	4	29
QPE02/003	Using and Communicating Technical Information	2	4	29

Optional assessment routes: learners must complete the **three** mandatory units **plus five** more assessment routes units from the following

Optional assessment routes: learners must complete one of the following assessment routes

EAL code	Title	Level	Credit	GLH
QPE02/004	Producing Mechanical Engineering Drawings using a CAD System	2	11	61
QPE02/032	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61
QPE02/061	Producing CAD Models (Drawings) using a CAD System	2	11	61

Plus two assessment routes from the following:

QPE02/062	Producing Engineering Project Plans	2	8	37
QPE02/063	Using Computer Software Packages to Assist with Engineering Activities	2	8	37
QPE02/064	Conducting Business Improvement Activities	2	8	41

Plus two assessment routes from the following:

QPE02/065	General Machining, Fitting and Assembly Applications	2	12	55
QPE02/066	General Fabrication and Welding Applications	2	12	55
QPE02/067	General Electrical and Electronic Engineering Applications	2	12	55
QPE02/068	General Maintenance Engineering Applications	2	12	55

(This page is intentionally blank)