

## The NI Traineeship in Engineering Maintenance

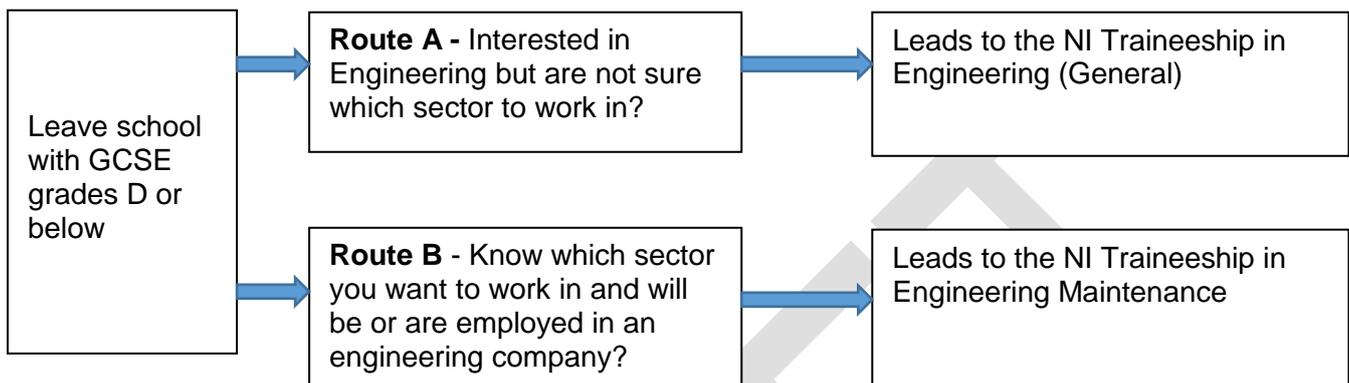
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## Framework for Northern Ireland

### 1. Occupational Framework Title

#### NI Traineeship in Engineering Maintenance

There are two different routes through this framework. Learners will complete one of the following routes – A or B, depending on their GCSE grades, experience and interests.



#### • Route A - NI Traineeship in Engineering (General)

This Traineeship is for learners who have left school with GCSE grades D (or equivalent new grade 3) or below in some subjects, with an interest in Engineering but are not sure which sub-sector to work in.

They will:

- be unemployed status
- attempt to improve their GCSE grades to a minimum of a Grade C (or equivalent new grade 4) if required
- undertake work experience - ideally in engineering companies
- develop basic engineering competency skills by completing a Level 2 qualification
- develop a knowledge of engineering by completing an engineering technical certificate
- develop employability skills such as CV writing, interview techniques, working with others and problem solving, some Transversal/Transferable Skills

#### • Route B - The NI Traineeship in Engineering Maintenance

This Traineeship is for learners who have left school with GCSE grades D (or equivalent new grade 3) or below in key subjects and are employed in an engineering company.

They will:

- be employed by an engineering maintenance company
- develop basic engineering competency skills by completing a Level 2, or a work based NVQ Level 2 as selected by their employer (employer to select relevant units in either Performing Engineering Operations (PEO) or a Level 2 Maintenance NVQ)
- develop a knowledge of engineering by completing an engineering technical certificate
- developed a range of Transversal/Transferable Skills

Whichever route you choose will give you the opportunity to do a variety of job roles, such as the ones described in the following Section 2.

### 2. Occupational Profile

Engineering Maintenance Fitters maintain the effective operation of equipment in the Engineering Sector. Technicians work across a broad range of job roles in the Mechanical, Electronics, Electrical, Food and Drink, Fluid Power and Plant Maintenance sectors.

## CORE OCCUPATIONAL STANDARD

Across the job roles in Engineering Maintenance, trainees will be able to understand and demonstrate the following core knowledge, skills, behaviours and transversal skills relevant to their chosen specialism.

### Core Knowledge

- Understand the typical hazards that can occur
- What health, safety and environmental procedures and precautions to follow
- How to use engineering data, drawings and reports
- The use of servicing schedules
- Fault-finding techniques and applications
- Dismantling and reassembly methods and techniques for repairing equipment
- The procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance process
- What tools/equipment are required and how to check the condition and use them
- Appropriate checking/electronic test methods and equipment
- How to deal with faults and problems
- How to evaluate and record results
- Hand over procedures

### Core Skills

- Carry out scheduled servicing activities on a range of equipment
- Detect faults on a range of equipment, at both assembly and component level
- Apply a range of dismantling and assembling techniques to remove and replace faulty components or equipment
- Repair a range of equipment and systems at board and component level
- Assist in the installation of a range of equipment, making the required connections, checks and adjustments
- Prevent equipment problems by identifying potential causes rather than waiting for a problem to occur

### Core Behaviours and Transversal Skills

The following transversal skills and behaviours should be developed through naturally occurring activities in the job role within the apprenticeship. They should be included and recorded in the competence and knowledge qualifications.

#### Behaviours

- A strong work ethic
- Dependability
- Integrity
- Positive attitude
- Responsibility
- Motivation
- Team player
- Honesty and commitment

#### Skills

- Literacy
- Numeracy
- Communication
- Digital Skills
- Self-management
- Working with others
- Work professionalism
- Problem solving and decision making

## Specialist Pathways

Specialist Pathway	Knowledge	Skills
<i>Mechanical Maintenance Fitter</i>	<p>Methods and techniques for installing and connecting mechanical equipment</p> <p>The functions of different types of mechanical equipment and how they work</p>	Produce and/or repair mechanical components using hand fitting and manual machining techniques
<i>Electronic Maintenance Fitter</i>	<p>The different types of cabling and their uses</p> <p>The functions of digital circuits and components and how they work</p>	Use electrostatic discharge procedures
<i>Electrical Maintenance Fitter</i>	<p>The different types of cabling and their uses</p> <p>The function of electrical circuits and components and how they work</p>	Modify, rewire and update electrical circuits
<i>Food and Drink Maintenance</i>	Comply with health and safety and other relevant food and drink regulations, directives and guidelines	The specific health and safety food and drink precautions to be applied during the maintenance activities, and the responsibility these requirements place on you not to compromise food safety
<i>Fluid Power Maintenance Fitter</i>	The functions of different types of fluid power components and seals and how they work	
<i>Plant Maintenance Fitter</i>	<p>How to follow the correct decontamination procedures, environmental control and company operating procedures</p> <p>How the plant or system functions, and the working purpose of the various units within it</p> <p>How to recognise installation defects in plant or systems equipment</p>	

### 3. Entry requirements

As a guide, the NI Traineeship in Engineering Maintenance is suitable for applicants who have left school with GCSE grades D (or equivalent new grade 3) or below in key subjects including Maths, English, and a Science. Candidates may be considered on an exceptional basis for entry if they do not meet the stated requirements. If applicants have shown an interest in engineering, or have previous work experience or employment in the sector, then this would be relevant to include in their application.

Typically applicants must be:

- willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- able to follow instructions and diagrams, with literacy and numeracy to work with data
- a good team worker, who can also work under own initiative
- keen and motivated to work in an engineering or manufacturing environment
- able to develop transversal/transferable skills

#### 4. Duration

Both routes in this Engineering Maintenance traineeship typically take 24 months for trainees starting this traineeship with no or little engineering experience.

Adult trainees or those with relevant experience or who have already achieved some of the required qualifications may require less time to complete the programme.

#### 5. National Occupational Standards (NOS)

This Traineeship in Engineering Maintenance is underpinned by National Occupational Standards (NOS) which indicate the standards of competency performance that trainees must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding.

The relevant NOS for this framework are in the Performing Engineering Operations Suite 2 and Engineering Maintenance and Installation Suite 2, where:

- the competency qualifications standards are linked directly to the NOS
- the underpinning knowledge qualification specifications are linked where possible to the NOS

Specific details of these can be found in [Appendix 1](#)

#### 6. Qualifications

Qualifications are based on competency and knowledge. Competence and technical knowledge are separately identified and separately assessed to ensure trainees not only demonstrate the competence to do the job, but also develop the underpinning technical skills, knowledge and understanding of the wider industry and market.

If trainees have already achieved any of the qualifications, or have relevant experience of working in the sector, this prior achievement can be recognised.

The relevant competency qualifications derived from these NOS are:

- Level 2 NVQ/SVQ Diploma in Performing Engineering Operations
- Level 2 NVQ Diploma in Engineering Maintenance and Installation (only suitable for employed trainees)

They contain pathways relevant to the job roles listed in Section 2.

This table summarises what qualifications must be taken – qualification details are given in [Appendix 2](#)

Competency	Knowledge (Technical Certificate)
<p><b>Route A</b> Trainees must complete a PEO L2 qualification offered by one of these Awarding Organisations:</p> <ul style="list-style-type: none"> <li>▪ EAL</li> <li>▪ City &amp; Guilds</li> <li>▪ Pearson</li> <li>▪ SQA Awards</li> </ul>	<p><b>Route A or Route B</b> Trainees must complete one of the Technical Certificate listed in <a href="#">Appendix 2</a></p> <p>Each Technical Certificate is relevant to both Route A and Route B, so there is no restriction by route choice.</p>

<p><b>Route B</b> Trainees must complete <b>either</b>:</p> <ul style="list-style-type: none"><li>• a PEO L2 qualification (as in Route A) with units relevant to their job role</li></ul> <p><b>or</b></p> <ul style="list-style-type: none"><li>• a work based NVQ L2 in Engineering Maintenance and Installation as selected by their employer and offered by one of these Awarding Organisations:<ul style="list-style-type: none"><li>▪ EAL</li><li>▪ City &amp; Guilds</li><li>▪ Pearson</li></ul></li></ul>	
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## 7. Assessment

Qualifications must be assessed and this can be through a variety of different methods. Some may be assessed internally (such as by tests or project work) or externally (such as by exams) or require a portfolio of evidence.

The competence qualifications must be assessed in a work environment. The knowledge qualification may have some type of external assessment.

Assessors must hold the Level 3 Award in Assessing Competence in the Work Environment and have current, verifiable, relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence requirements.

## 8. Enhancements

No additional enhancements have been identified by employers to date but in the Food and Drink sector they could include Food Safety and Hygiene and HACCP (Hazard analysis and critical control points) courses/qualifications

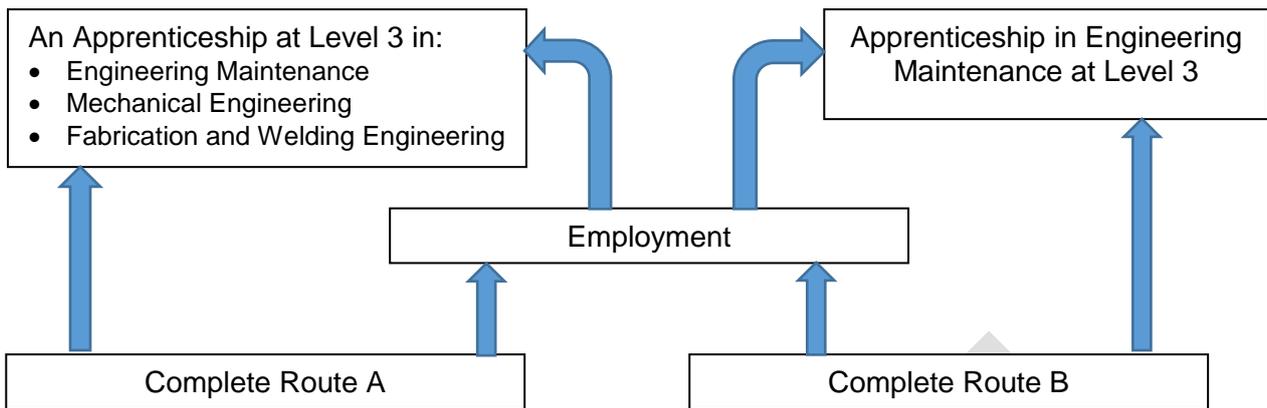
## 9. Progression

When trainees have completed this framework, either through Route A or Route B, they have two options open to them.

They can gain employment within an engineering company, perhaps in one of the semi-skilled job roles described earlier, leading to internal promotion to team leader or supervisory roles. In time, they may also choose to complete an Apprenticeship at Level 3.

Alternatively it gives an opportunity to progress directly to a Level 3 Apprenticeship. The general nature of the PEO Level 2, combined with relevant work experience, allows trainees to move between and across sectors.

Employed trainees completing Route B of the Level 2 Traineeship can progress to the Level 3 Apprenticeship in Engineering Maintenance.



The following websites are useful to help trainees plan career progression:

[www.apprenticeships.org.uk/types-of-apprenticeships/engineering-and-manufacturing-technologies.aspx](http://www.apprenticeships.org.uk/types-of-apprenticeships/engineering-and-manufacturing-technologies.aspx)

[nationalcareersservice.direct.gov.uk/advice/planning/jobfamily/Pages/manufactureandengineering.aspx](http://nationalcareersservice.direct.gov.uk/advice/planning/jobfamily/Pages/manufactureandengineering.aspx)

## Appendix 1

The Level 2 NVQ Diploma in Performing Engineering Operations qualification is derived from the following standards:

	URN	Title of the Occupational Standard
Core NOS for all pathways	SEMMAN12301	Complying with statutory regulations and organisational safety requirements
	SEMPEO202	Working efficiently and effectively in engineering
	SEMPEO203	Using and communicating technical information
Available NOS	SEMPEO204	Producing mechanical engineering drawings using a CAD system
	SEMPEO205	Producing components using hand fitting techniques
	SEMPEO206	Producing mechanical assemblies
	SEMPEO207	Forming and assembling pipework systems
	SEMPEO208	Carrying out aircraft detail fitting activities
	SEMPEO209	Installing aircraft mechanical fasteners
	SEMPEO210	Producing aircraft detail assemblies
	SEMPEO211	Preparing and using lathes for turning operations
	SEMPEO212	Preparing and using milling machines
	SEMPEO213	Preparing and using grinding machines
	SEMPEO214	Preparing and proving CNC machine tool programs
	SEMPEO215	Preparing and using CNC turning machines
	SEMPEO216	Preparing and using CNC milling machines
	SEMPEO217	Preparing and using CNC machining centres
	SEMPEO218	Preparing and using industrial robots
	SEMPEO219	Maintaining mechanical devices and equipment
	SEMPEO220	Assembling and testing fluid power systems
	SEMPEO221	Maintaining fluid power equipment
	SEMPEO222	Producing sheet metal components and assemblies
	SEMPEO223	Producing platework components and assemblies
	SEMPEO224	Cutting and shaping materials using thermal cutting equipment
	SEMPEO225	Preparing and proving CNC fabrication machine tool programs
	SEMPEO226	Preparing and using CNC fabrication machinery
	SEMPEO227	Preparing and using manual metal arc welding equipment
	SEMPEO228	Preparing and using manual TIG or plasma-arc welding equipment
	SEMPEO229	Preparing and using semi-automatic MIG, MAG and flux cored arc welding equipment
	SEMPEO230	Preparing and using manual oxy/fuel gas welding equipment
	SEMPEO231	Preparing and using manual flame brazing and braze welding equipment
	SEMPEO232	Producing electrical or electronic engineering drawings using a CAD System
	SEMPEO233	Wiring and testing electrical equipment and circuits
	SEMPEO234	Forming and assembling electrical cable enclosure and support systems
	SEMPEO235	Assembling, wiring and testing electrical panels/components mounted in enclosures
	SEMPEO236	Assembling and testing electronic circuits
	SEMPEO237	Maintaining electrical equipment/systems
	SEMPEO238	Maintaining electronic equipment/systems
	SEMPEO239	Maintaining and testing process instrumentation and control devices
	SEMPEO240	Wiring and testing programmable controller based systems
	SEMPEO241	Using wood for pattern, modelmaking and other engineering applications

SEMPEO242	Assembling pattern, model and engineering woodwork components
SEMPEO243	Producing composite mouldings using wet lay-up techniques
SEMPEO244	Producing composite mouldings using pre-preg techniques
SEMPEO245	Producing composite mouldings using resin flow infusion techniques
SEMPEO246	Producing composite assemblies
SEMPEO247	Producing components by rapid prototyping techniques
SEMPEO248	Producing and preparing sand moulds and cores for casting
SEMPEO249	Producing and preparing molten materials for casting
SEMPEO250	Producing cast components by manual means
SEMPEO251	Fettling, finishing and checking cast components
SEMPEO252	Finishing surfaces by applying coatings or coverings
SEMPEO253	Finishing surfaces by applying treatments
SEMPEO254	Carrying out heat treatment of engineering materials
SEMPEO255	Carrying out hand forging of engineering materials
SEMPEO256	Stripping and rebuilding motorsport vehicles (pre-competition)
SEMPEO257	Inspecting a motorsport vehicle during a competition
SEMPEO258	Diagnosing and rectifying faults on motorsport vehicle systems (during competition)
SEMPEO259	Carrying out maintenance activities on motorsport vehicle electrical equipment
SEMPEO260	Stripping and rebuilding motorsport engines (pre-competition)
SEMPEO261	Producing CAD models (drawings) using a CAD system
SEMPEO262	Producing engineering project plans
SEMPEO263	Using computer software packages to assist with engineering activities
SEMPEO264	Conducting business improvement activities
SEMPEO265	General machining, fitting and assembly applications
SEMPEO266	General fabrication and welding applications
SEMPEO267	General electrical and electronic engineering applications
SEMPEO268	General maintenance engineering applications
SEMPEO269	Joining public service vehicle components by mechanical processes
SEMPEO270	Assembling structural sub-assemblies to produce a public service vehicle
SEMPEO271	Fitting sub-assemblies and components to public service vehicles
SEMPEO272	Preparing and manoeuvring armoured fighting vehicles (AFVs) for maintenance and transportation
SEMPEO273	Producing composite mouldings using resin film infusion techniques

**The Level 2 NVQ Diploma in Engineering Maintenance and Installation qualification is derived from the following standards:**

	<b>URN</b>	<b>Title of the Standard</b>
Core NOS for all pathways	SEMMAN12301	Complying with statutory regulations and organisational safety requirements
	SEMMAN2302	Using and interpreting engineering data and documentation
	SEMMAN203	Working efficiently and effectively in engineering
<b>Mechanical Pathway</b>	SEMEMI204	Handing over and confirming completion of maintenance or installation activities
Available NOS	SEMEMI205	Carrying out fault location on mechanical equipment
	SEMEMI206	Carrying out maintenance activities on mechanical equipment
	SEMEMI207	Restoring mechanical components to usable condition by repair
	SEMEMI208	Carrying out scheduled maintenance activities on mechanical equipment
<b>Electrical Pathway</b>	SEMEMI204	Handing over and confirming completion of maintenance or installation activities
Available NOS	SEMEMI209	Carrying out fault location on electrical equipment and circuits
	SEMEMI210	Carrying out maintenance activities on electrical equipment
	SEMEMI211	Carrying out modifications or rewiring electrical circuits
	SEMEMI212	Carrying out scheduled maintenance tasks on electrical equipment
<b>Electronic Pathway</b>	SEMEMI204	Handing over and confirming completion of maintenance or installation activities
Available NOS	SEMEMI213	Carrying out fault location on electronic equipment and circuits
	SEMEMI214	Carrying out Tests on electronic equipment and circuits
	SEMEMI215	Carrying out repairs electronic equipment
<b>Fluid Power Pathway</b>	SEMEMI204	Handing over and confirming completion of maintenance or installation activities
Available NOS	SEMEMI216	Carrying out fault location on fluid power equipment and circuits
	SEMEMI217	Carrying out maintenance activities on fluid power equipment
	SEMEMI218	Carrying out scheduled maintenance tasks on fluid power equipment
<b>Services Maintenance Pathway</b>	SEMEMI204	Handing over and confirming completion of maintenance or installation activities
Available NOS	SEMEMI219	Carrying out fault location on service systems and equipment
	SEMEMI220	Carrying out scheduled maintenance tasks on service systems and equipment
	SEMEMI221	Carrying out maintenance on water distribution systems and equipment
	SEMEMI222	Carrying out maintenance on emergency power generation equipment
	SEMEMI223	Carrying out maintenance on workplace environmental control equipment
	SEMEMI224	Carrying out maintenance on heating and ventilation equipment
	SEMEMI225	Carrying out maintenance on air conditioning and ventilation equipment
	SEMEMI226	Carrying out maintenance on gas distribution equipment
	SEMEMI227	Carrying out maintenance on compressed air systems equipment
	SEMEMI228	Carrying out maintenance on process control equipment
	SEMEMI229	Carrying out maintenance on instrumentation and control equipment
SEMEMI230	Carrying out maintenance on industrial refrigeration equipment	

	SEMEMI231	Carrying out maintenance on environmental control equipment
<b>Equipment Installation Pathway</b>  Available NOS	SEMEMI247	Assisting in the installation of mechanical equipment
	SEMEMI248	Assisting in the installation of electrical/electronic equipment
	SEMEMI249	Assisting in the installation of equipment to produce an engineered system
	SEMEMI250	Assisting in the installation of instrumentation and control equipment
	SEMEMI251	Assisting in the installation of fluid power equipment
	SEMEMI252	Assisting in the installation of process controller equipment
	SEMEMI253	Assisting in the installation of emergency electrical power generation equipment
	SEMEMI254	Assisting in the installation of environmental pollution control equipment
	SEMEMI255	Assisting in the installation of workplace environmental control equipment
	SEMEMI256	Assisting in the installation of heating and ventilation equipment
	SEMEMI257	Assisting in the installation of air conditioning and ventilation equipment
	SEMEMI258	Assisting in the installation of compressed air equipment
	SEMEMI259	Assisting in the installation of waste/foul water distribution equipment
	SEMEMI260	Assisting in the installation of fresh water distribution equipment
	SEMEMI261	Assisting in the installation of refrigeration equipment

## Appendix 2

### Qualifications – Trainees need to complete:

**One Competency qualification**  
(relevant to their choice of Route A or Route B)

and

**One Knowledge Certificate**  
(applicable to both routes)

Competency		Knowledge (Technical Certificate)	
Title	QAN	Title	QAN
<b>Route A – Level 2 NVQ/SVQ Diploma in Performing Engineering Operations</b>			
EAL Level 2 NVQ Diploma in Performing Engineering Operations	600/8264/1	EAL Level 2 Certificate in Engineering Technologies	601/5670/3
		or	
City & Guilds Level 2 NVQ Diploma in Performing Engineering Operations	600/9471/0	EAL Level 2 Diploma in Engineering Technologies	601/5669/7
		or	
Pearson Level 2 NVQ Diploma in Performing Engineering Operations	601/2547/0	EAL Level 2 Intermediate Diploma in Electrical Installation	601/4561/4
		or	
EAL SVQ Level 2 NVQ Diploma in Performing Engineering Operations	GL2P 22	EAL Level 2 Diploma in Maintenance Engineering Technology	501/1059/7
		or	
SQA SVQ Level 2 NVQ Diploma in Performing Engineering Operations	GL63 22	Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)	500/8270/X
		or	
<b>Route B (employed Trainees only) – one from:</b>			
<ul style="list-style-type: none"> <li>Level 2 NVQ/SVQ Diploma in Performing Engineering Operations (as above)</li> <li>Level 2 NVQ Diploma in Engineering Maintenance and Installation</li> </ul>		City & Guilds Level 2 Technical Certificate in Engineering	603/0294/X
		or	
EAL Level 2 NVQ Diploma in Engineering Maintenance and Installation	501/0147/X	City & Guilds Level 2 Diploma in Electrical Installations (Buildings and Structures)	600/5498/0
		or	
Pearson Level 2 NVQ Diploma in Engineering	501/0621/1	City & Guilds Level 2 Diploma in Engineering - Maintenance	600/0881/7

Maintenance and  
Installation

Technology

City & Guilds Level 2 NVQ 501/0377/5  
Diploma in Engineering  
Maintenance and  
Installation

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