



The Sector Skills Council
for Science, Engineering and
Manufacturing Technologies



Apprenticeship/Foundation Modern Apprenticeship in Engineering for England and Wales	Framework Issue Number 9 V6
Advanced Apprenticeship/Modern Apprenticeship in Engineering for England and Wales	Framework Issue Number 9 V6

Framework Code

1	0	6
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Date funding agreed by LSC

*(DCELLS will fund through normal
contracting procedures)*

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agreed)

**Implementation date:
England**

?

Wales



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

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Summary of Changes to this Framework

This framework now combines into one document the Apprenticeship/Foundation Modern Apprenticeship in Engineering and the Advanced Apprenticeship/Modern Apprenticeship in Engineering. The basic structure and qualifications contained in the respective frameworks have not fundamentally changed since previous issue numbers.

This framework allows Adult Apprentices (post 25 years) at both Apprenticeship and Advanced Apprenticeship levels to accredit industrial experience against the Initial Engineering Training and Basic Engineering Training respectively.

Those Adult Apprentices on the Apprenticeship programme who can demonstrate a minimum of three years in a manufacturing or engineering environment at operator level will be exempt from the requirement to undertake Initial Engineering Training providing this can be evidenced by a signed letter from the HR department detailing the period in question.

Adult Apprentices on the Advanced Apprenticeship programme following the **craft** route who can demonstrate a minimum of five years in a manufacturing or engineering environment at operator level will be exempt from the Basic Engineering Training providing this can be evidenced by a signed letter from the HR department detailing the period in question.

The basic structure of the framework for the Apprenticeship/Foundation Modern Apprenticeship and the Advanced Apprenticeship/Modern Apprenticeship in Engineering remains unchanged. However with the development of Functional Skills, the Functional Skills of English, Mathematics and ICT have been configured by QCA as replacements for the Key Skills in Communication, Application of Number and ICT respectively by 2010. Therefore it is appropriate to offer these as a choice within the framework to permit piloting.

The components identified for each programme are as follows:

Apprenticeship/Foundation Modern Apprenticeship

- Initial Engineering training (units of PEO NVQ Level 2)
- NVQ Level 2
- Technical certificate at level 2
- Key or *Functional Skills at levels 2 & 1
- ERR

Advanced Apprenticeship/Modern Apprenticeship

- Basic Engineering training (PEO NVQ Level 2)
- NVQ Level 3
- Technical certificate at level 3
- Key skills or *Functional Skills at level 2
- ERR

** Please note Functional Skills only apply in England*

There are new 'technical routes', ie new NVQ/Technical Certificate combinations but these lie within the basic unchanged structure. The tables reflect the changes required in both frameworks.

At Apprenticeship level due to requests from the sector, the Engineering Technical Support National Occupational Standards have been updated and a new qualification is now included within this framework version. Also included is the option to deliver the Performing Engineering Operations NVQ through two new awarding bodies which were not available in previous versions.

At Advanced Apprenticeship level, both the NVQs in Instrument Servicing and Engineering Leadership accreditation have expired. Engineering Leadership has been replaced by a more current version which is in line with the updated NOS, and the Instrument Servicing has now been introduced as a pathway within the Engineering Maintenance NVQ.

***Apprenticeship/Foundation Modern Apprenticeship in Engineering**

NVQ Table

Old NVQs (approved for use within issue 9 V5 but removed for issue 9 V6)		
Qualification Title	Qual Ref No	Awarding Body
Business Improvement Techniques	100/2084/6	EAL
Business Improvement Techniques	100/2632/0	City & Guilds

Revised NVQs introduced for issue 9 V6		
Qualification Title	Qual Ref No	Awarding Body
Engineering Technical Support	500/3755/9	EAL
Engineering Technical Support	500/3941/6	City & Guilds
Performing Engineering Operations	500/2953/8	PAA/VQ SET
Performing Engineering Operations	500/2466/8	Edexcel
Performing Engineering Operations	500/1719/6	ETCAL
Business Improvement Techniques	500/2154/0	EAL
Business Improvement Techniques	500/3057/7	City & Guilds

Technical Certificate Table

Old Technical Certificates (approved for use within issue 9 V5 but removed for issue 9 V6)		
Qualification Title	Qual Ref No	Awarding Body
None		

Revised Technical Certificates introduced for issue 9 V6		
Qualification Title	Qual Ref No	Awarding Body

Advanced Apprenticeship/Modern Apprenticeship In Engineering

NVQ Table

Old NVQs (approved for use within issue 9 V5 but removed for issue 9 V6)		
Qualification Title	Qual Ref No	Awarding Body
Instrument Servicing	100/1897/9	EAL
Engineering Leadership	100/4391/9	EAL

Revised NVQs introduced for issue 9 V6		
Qualification Title	Qual Ref No	Awarding Body
Engineering Leadership	500/3841/2	EAL
Engineering Technical Support	100/4766/9	EAL
Engineering Technical Support	500/3805/9	City and Guilds
Aeronautical Engineering	100/4508/9	ETCAL
Engineering Technical Support	100/5686/5	ETCAL

Technical Certificate Table

Old Technical Certificates (approved for use within issue 9 V5 but removed for issue 9 V6)		
Qualification Title	Qual Ref No	Awarding Body
There have been no technical certificates removed		

Revised Technical Certificates introduced for issue 9 V6		
Qualification Title	Qual Ref No	Awarding Body

1 Contact Details of the Industry or Sector

Title, level and coverage of apprenticeship	<ul style="list-style-type: none">• Apprenticeship/Foundation Modern Apprenticeship in Engineering at level 2 for England and Wales• Advanced Apprenticeship/Modern Apprenticeship in Engineering at level 3 for England and Wales
Name of Sector Skills Council/Sector Body	SEMTA
Contact name	Ian M Carnell Head of Learning Strategies
Address	SEMTA SEMTA House 14 Upton Road Watford Herts WD18 0JT
Telephone number	01923 238441
Fax number	01923 652390
Email address	icarnell@semta.org.uk
Date sent to SfB AAG	13 th August 2008
Date of Implementation of version 5	

1.1 Responsibility for the Framework

Responsibility for the Apprenticeship/Foundation Modern Apprenticeship in Engineering and the Advanced Apprenticeship/Modern Apprenticeship in Engineering rests with SEMTA the Sector Skills Council for Science, Engineering and Manufacturing Technologies.

2 Summary of the Mandatory Outcomes

2.1 Apprenticeship/Foundation Modern Apprenticeship in Engineering

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Apprenticeship/Foundation Modern Apprenticeship	Level
Competence Based Element	
NVQ(s)	
Performing Engineering Operations	2
Business Improvement – Techniques	2
Mechanical Manufacturing Engineering	2
Fabrication and Welding Engineering	2
Aeronautical Engineering	2
Engineering Maintenance and Installation	2
Materials Processing and Finishing	2
Electrical and Electronics Servicing	2
Marine Engineering	2
Railway Engineering *	2
Engineering Technology Maintenance Support	2
Engineering Leadership	2
Technical Services	2
Engineering Technical Support	2
<p><i>* Please note that the City and Guilds NVQ level 2 in Railway Engineering is only for use by Network Rail and London Transport Apprentices.</i></p>	
Knowledge Based Element	
Technical Certificate(s)	
EAL Intermediate Certificate in Engineering and Technology	2
EAL Certificate in Cycle Maintenance	2
EAL Intermediate Certificate in Clocks and Watches	2
EAL Certificate in Business Improvement Techniques	2
ABC Certificate in Welding and Fabrication	2
CITY & GUILDS Certificate in Engineering	2
CITY & GUILDS Progression Award in Electrical & Electronics Servicing	2
CITY & GUILDS Certificate in Aeronautical Engineering	2
CITY & GUILDS Certificate in Electro-technical Technology	2
CITY & GUILDS Certificate in Vehicle Maintenance and Repair *	2
CITY & GUILDS Diploma in Vehicle Maintenance and Repair *	2
Edexcel First Certificate in Engineering	2
	2
Continued on next page.	

<p>Edexcel BTEC First Diploma in Engineering</p> <p>Edexcel BTEC First Diploma in Vehicle Technology (Motorsport) IMI Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) *</p> <p><i>* Please note that these qualifications are only for use by the MoD or by organisations undertaking specialist applications.</i></p>	2
<p style="text-align: center;">Key Skills</p> <p>Application of Number 1 Communications 1 Information and Communication Technology 1 Improving Own Learning and Performance 2 Working with Others 2</p> <p style="text-align: center;">Or</p> <p style="text-align: center;">Functional Skills</p> <p>*Functional Skill: Mathematics 1 *Functional Skill: English 1 *Functional Skill: ICT 1</p> <p>Plus Key Skills: Improving Own Learning and Performance 2 Working with Others 2</p> <p><i>* Please note Functional Skills only apply in England</i></p>	1 1 1 2 2 1 1 1 2 2
<p style="text-align: center;">Additional Employer Requirements</p> <p>All apprentices must complete the following three units from the NVQ level 2 Performing Engineering Operations (PEO) - NVQ Level 2</p> <p>Unit 1: Working safely in an engineering environment 2 Unit 2: Working efficiently and effectively in engineering 2 Unit 3: Using and communicating technical information 2</p> <p>OR</p> <p>An alternative Initial Engineering Training programme can be agreed in writing by SEMTA prior to commencement.</p> <p style="text-align: center;">Continued on next page.</p>	2 2 2

Adults – Post 25yrs

*Adult Apprentices are exempt from the need to complete the PEO units required above if they are able to demonstrate a minimum of three years industrial experience within a manufacturing or engineering environment at operator or equivalent level. This needs to be evidenced by a signed letter from the HR department detailing the period in question.

*Please note that under these circumstances the output NVQ cannot be Performing Engineering Operations NVQ Level 2

Employment Responsibilities and Rights

For this framework, our Industry Steering Group has recommended that ERR is included in the induction and subsequent phases of their industrial period, and to this end SEMTA have produced ERR workbooks for the apprentice and their trainer. ERR must be completed by the end of the Apprenticeship in Engineering framework. On completion, the trainer or training provider should fill in the 'Confirmation of Completion' form contained within the ERR workbook. This form must be included with the request for the Advanced Apprenticeship in Engineering certificate.

It is not deemed necessary for Apprentices/Foundation Modern Apprentices beyond the age of 25 yrs to undertake ERR if they have completed three years or more working in the engineering industry.

2.2 Advanced Apprenticeship/Modern Apprenticeship in Engineering

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Advanced Apprenticeship/Modern Apprenticeship in Engineering	Level
Competence Based Element	
NVQ(s)	
Engineering Woodworking, Pattern and Model Making	3
Installation and Commissioning	3
Engineering Maintenance	3
Fabrication and Welding Engineering	3
Automotive Engineering	3
Aeronautical Engineering	3
Mechanical Manufacturing Engineering	3
Materials Processing and Finishing	3
Engineering Technical Support	3
Marine Engineering	3
Electrical and Electronics Servicing	3
Electrical and Electronics Engineering	3
Engineering Toolmaking	3
Railway Engineering *	3
Engineering Technology Maintenance	3
Engineering Leadership	3
<p><i>* Please note that the City and Guilds NVQ level 3 in Railway Engineering is only for use by Network Rail and London Transport Apprentices.</i></p>	
Knowledge Based Element	
Technical Certificate(s)	
EAL Advanced Diploma in Engineering and Technology	3
EAL Advanced Diploma in Engineering and Technology (progressive)	3
EAL Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches	3
EAL Diploma in cycle Maintenance	3
ABC Diploma in Welding and Fabrication	3
CITY & GUILDS Certificate in Aeronautical Engineering	3
CITY & GUILDS Certificate in Electrotechnical Technology	3
CITY & GUILDS Certificate in Engineering	3
CITY & GUILDS Certificate in Vehicle Maintenance and Repair *	3

Continued on next page.

CITY & GUILDS Diploma in Vehicle Maintenance and Repair *	3
Edexcel National Award in Engineering	3
Edexcel BTEC National Award in Communications Technology	3
Edexcel BTEC National Certificate in Communications Technology	3
Edexcel BTEC National Certificate in Engineering	3
Edexcel BTEC National Diploma in Engineering	3
Edexcel BTEC National Diploma in Communications Technology	3
Edexcel BTEC National Certificate in Electrical / Electronic Engineering	3
Edexcel BTEC National Diploma in Electrical / Electronic Engineering	3
Edexcel BTEC National Certificate in Mechanical Engineering	3
Edexcel BTEC National Diploma in Mechanical Engineering	3
Edexcel BTEC National Certificate in Operations and Maintenance Engineering	3
Edexcel BTEC National Diploma in Operations and Maintenance Engineering	3
Edexcel National Certificate in Aerospace Engineering	3
Edexcel National Diploma in Aerospace Engineering	3
Edexcel BTEC National Certificate in Manufacturing Engineering	3
Edexcel BTEC National Diploma in Manufacturing Engineering	3
Edexcel BTEC National Certificate in Vehicle Maintenance and Repair	3
Edexcel BTEC National Award in Vehicle Technology (motorsports)	3
IMI Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)*	3

** Please note that these qualifications are only for use by the MoD or by organisations undertaking specialist applications.*

Key Skills

Application of Number	2
Communication	2
Information and Communication Technology	2
Improving Own Learning and Performance	2
Working with Others	2

Or

Functional Skills

*Functional Skill: Mathematics	2
*Functional Skill: English	2
*Functional Skill: ICT	2

Plus Key Skills:

Improving Own Learning and Performance	2
Working with Others	2

** Please note Functional Skills only apply in England*

Additional Employer Requirements

Young people age 16 to 25yrs with no previous experience

Young people age 16 to 25yrs with no previous experience must complete the NVQ level 2 Performing Engineering Operations (PEO), as detailed below.

Candidates following the **Engineering Practices** pathway must complete the three mandatory assessment routes, **plus three more of the optional assessment routes** as detailed in the qualification structure.

Mandatory Assessment routes:

- Unit 1: Working safely in an engineering environment
- Unit 2: Working efficiently and effectively in engineering
- Unit 3: Using and communicating technical information

Candidates following the **Technical Support** pathway must complete the three mandatory assessment routes detailed above, **plus five more of the optional assessment routes**, as detailed in the qualification structure.

OR

An alternative Initial Stage Training agreed in writing by SEMTA prior to commencement

Adults – Post 25yrs

Adult apprentices are exempt* from the need to complete the **PEO Engineering Practices Pathway (6 Units)** specified above if they are able to demonstrate a minimum of five years industrial experience within a manufacturing or engineering environment at level 2 (operator or equivalent level). This needs to be evidenced by a signed letter from their company HR department detailing the period in question.

*Please note that there are no exemptions for adult apprentices following the **Technical Support Pathway** all must complete the full eight units as specified, these being the three mandatory assessment units detailed above plus five more of the optional assessment units as detailed in the qualification structure.

OR

An alternative Initial Engineering Training programme can be agreed in writing by SEMTA prior to commencement.

Employment Responsibilities and Rights

For this framework, our Industry Steering Group has recommended that ERR is included in the induction and subsequent phases of their industrial period, and to this end SEMTA have produced ERR workbooks for the apprentice and their trainer. ERR must be completed by the end of the Advanced Apprenticeship/Modern Apprenticeship in Engineering framework. On completion, the trainer or training provider should fill in the 'Confirmation of Completion' form contained within the ERR workbook. This form must be included with the request for the Advanced Apprenticeship/Modern Apprenticeship in Engineering certificate

Advanced/Modern Apprentices aged 25+ only

It is not deemed necessary for apprentices beyond the age of 25 yrs to undertake ERR if they have completed three years or more working in the engineering industry.

3 Overview of the Framework

3.1 Rationale for Framework

Background to the review of the Apprenticeship/Foundation Modern Apprenticeship in Engineering and the Advanced Apprenticeship/Modern Apprenticeship in Engineering for England and Wales

3.1.1 Why does the engineering Sector need to review its frameworks?

The engineering sector has perhaps the longest tradition of any sector of using apprenticeship frameworks as a means of providing high quality work based training, leading to semi-skilled or skilled status. SEMTA, originally as an Industry Training Board (ITB) then as an Industry Training Organisation (ITO) and now as a Sector Skills Council has co-ordinated the industry's resources to ensure this important training initiative continues to meet the needs of employers in our sector.

Central to this process is the need to regularly review the specification, applicability, and operation of our frameworks. Traditionally we have felt the need to revise our frameworks on an annual basis in order to ensure that they are fit for purpose.

The engineering sector is fast moving, with new technologies being developed and brought to the market place at an ever increasing pace. The need to remain on the cutting edge of technology must be reflected in our training arrangements if we are to remain globally competitive. Engineering National Occupational Standards (NOS) drive the process from which new NVQs and technical certificates are developed. These in turn, are incorporated into frameworks for training.

Underpinning these technological developments are the traditional, but no less important traditional engineering practices, such as welding and fabrication, engineering maintenance and engineering production activities. Without these, industry would soon grind to a halt.

In summary we:

- Wanted to ensure that our frameworks incorporated the latest developments in National Occupational standards, reflected in a new generation of engineering NVQs and technical certificates
- Wanted to incorporate the recommendations generated from our National Training Framework Committee concerning framework design and operation
- Were conscious of the need to ensure that adequate funding was available to cover the direct costs of training
- Wanted to respond to the downturn in engineering apprenticeship starts that has occurred recently
- Ensure our framework meets the specification of the SSDA blueprint
- Wanted to ensure our frameworks remain fit for purpose, and are capable of meeting both the current and future training needs of both employers and young people.

3.1.2 Description of the Sector and why the sector needs Apprenticeships

The engineering industry is composed of eight core sectors located on 74,000¹ sites in Great Britain; employing 1.82 million people who are within SEMTA's remit of engineering manufacturing. The majority of engineering establishments are small, with 92% employing fewer than 50 people. Overall, 45% of sites with 5 or more employees employ apprentices or recognised trainees.

The National Employers Skills Survey (NESS) 2005 has identified that the engineering and construction sectors are suffering the greatest skill challenges in recruitment. They have a high proportion of hard to fill vacancies, and a high number of current skills shortages.

Within SEMTA employers:

- 45% of *SSVs are in skilled trades (craft level) – Advanced Apprenticeship/Modern Apprenticeship
- 19% of SSVs are operator level – Apprenticeship/Foundation Modern Apprenticeship
- 12% of SSVs are at associate professional level - Higher Apprenticeship

*Please note SSV = Skills Shortage Vacancies

The NESS also identified that SEMTA employers as a consequence were experiencing:

- Increased operating costs
- Loss of business orders to competitors
- Delays in developing new products and services
- Need to outsource work

In more detail, SEMTA has identified that:

The main skills required by those with difficulty recruiting skilled or qualified people were welding skills (15 per cent) and ability to use CNC machinery (12 per cent). These skills were particularly sought when trying to fill vacancies for crafts persons. Specific skills required for technicians included CAD design, mechanical engineering skills and computer/numerically controlled programming skills.

Labour market information gathered by SEMTA, and incorporated into the Sector Skills Agreement for Aeronautical, Automotive and Electronics, indicates an increased requirement for higher-level technicians. Recognising this shift of emphasis within the industry, SEMTA has incorporated a number of new NVQs and Technical Certificates specifically aimed at technicians within the Advanced Apprenticeship/Modern Apprenticeship.

In addition SEMTA has been working with the DfES and the LSC on a Higher Apprenticeship Programme at level 4, that will address technician training needs at a higher level than the Advanced Apprenticeship/Modern Apprenticeship.

According to recent forecasts, the overall level of employment within the engineering sector is in declining, however this is predominantly as a consequence of the loss of non-skilled jobs, rather than a decline in operator, craft and technician jobs. Given the counter-

¹ Source: Labour Force Survey 2004/5 & Annual Business enquiry 2004

balancing effect of annual wastage due to retirement, long-term sickness and migration, the actual demand in these categories is increasing by 3% per annum.

Apprenticeships are seen as a key initiative within the Sector Skills Agreement for addressing skills shortages in these areas. However it is clear that 16-24 year olds cannot account for the total replacement requirement, hence there is significant emphasis on promoting adult apprenticeships to address the shortfall.

3.1.3 The relationship between SEMTA's frameworks and other SSC frameworks

SEMTA own all the Occupational Standards underpinning its NVQ s within framework 106, with the exception of Railway engineering NVQ levels 2&3. In this case, we have sought and obtained permission to use these NVQs within our framework from Go Skills in 2005, and this permission remains current. We include railway maintenance within our framework at the request of Network Rail who find our engineering apprenticeship especially suitable for maintenance of trackside equipment. This underpins the absolute requirement to ensure the highest possible safety standards. The use of these NVQs is limited to Network Rail and London Transport apprentices.

Even within the same sub-sector skills requirements can vary significantly for example Marine engineering ranges from the development of a new aircraft carrier for the Royal Navy to high spec luxury motor yachts. The skills required are very different, however SEMTA provides both National Occupational Standards and Apprenticeship pathways to meet this diversity.

Motor-sport is an area where the SSC boundaries are less well defined, as there is both manufacture and service activity. We were asked by the motor-sport sector to produce a set of National Occupational Standards that meet this sub-sector's specialist requirements. These standards were agreed with Autoskills SSC. NVQs and technical certificates have subsequently been developed from the standards and these have been incorporated into framework 106 to provide an apprenticeship pathway for this important sub-sector.

There are also a limited number of technical certificates that we use in support of our NVQs that are used in other SSCs' frameworks. An example of this is the Electrotechnical Technology Certificate, although this is nominally owned by Summit skills, it is a direct replacement for C&G 2360 that has been a vocational education component of SEMTA's engineering framework for 7 years. In terms of explanation, Summit skills specialise in the installation of heating, refrigeration and ventilation systems. Electrical electronic maintenance engineers allied to SEMTA are responsible for maintaining all forms of plant equipment including this equipment and therefore need the same theoretical knowledge. SEMTA's policy is to remain sensitive to our SIC /SOC footprint and respect other SSCs footprints at all times.

3.1.4 Occupations/most common job roles for apprentices undertaking the Apprenticeship/Foundation Modern Apprenticeship and the Advanced/Modern Apprenticeship in Engineering

The Apprenticeship/Foundation Modern Apprenticeship in Engineering provides the best possible preparation to achieve trained operator/semi-skilled status within the industry. Likewise the Advanced/Modern Apprenticeship in Engineering is appropriate for achieving skilled craft/technician status.

The core engineering sub-sectors covered by SEMTA relating to both frameworks are:

Aerospace
Automotive
Basic metals
Electrical equipment
Electronics
Other transport equipment
Mechanical equipment
Boat and Shipbuilding

Each of the frameworks covers a vast range of job roles/functions within the eight sub-occupational sectors. It is impossible to detail all the job roles as these are too numerous. However, it is possible to give an indication of some of the job roles/functions for representative purposes, these are contained in Annex C. Below are example lists of both semi-skilled (Apprenticeship/Foundation Modern Apprenticeship) and skilled status (Advanced/Modern apprenticeship in Engineering). In the case of the Apprenticeship/Foundation Modern Apprenticeship, examples have been taken across a range of sectors, and for the Advanced/Modern Apprenticeship from one individual sector.

A&FMA
Cross-sector

- Aerospace assembly - component sub-assembly, airframe structures, engine modules and accessories. Roles/activities – assembly and fitting.
- Automotive assembly – new vehicle build, engine and transmission assembly, in car electronics assembly, control and power systems assembly. Roles/activities – assembly and fitting.
- Casting – ferrous and non-ferrous metals - investment casting, gravity, high, and low pressure die casting, lost wax. Roles/activities - Mould preparation, pouring, scurving, & inspection.
- Electrical engineering assembly of components, sub-assemblies, assembly and testing of harnesses. Roles/activities – assembly and fitting.
- Lift maintenance - servicing of lift power, control systems, and mechanical structure at level 2 - roles/activities – maintenance and service.
- Mechanical engineering – assembly, operation or maintenance of equipment required for automotive, aerospace, marine, industrial manufactured products and associated processes. Roles/activities – as specified above.
- Maintenance - automotive, aerospace, marine, manufacturing, industrial, electrical, electronics etc, at level 2 – semi-skilled maintenance fitter.

AA&MA

Aerospace Specific

- Airframe fitter – assembly of aircraft airframe structures, including load bearing assemblies (primary, secondary and tertiary structure), aerofoil surfaces, hydraulic and pneumatic systems.
- Aero engine fitter/tester – disassembly, build and test of engine core, systems and accessories, configure engine for test, ground running, calibration and performance test, installation of engine to airframe and flight test.
- Avionics technician – installation and maintenance of navigation, flight data and control systems.
- Aircraft Systems technicians – development and manufacture of hydraulic, pneumatics, electrical and mechanical control systems.

3.1.5 Career Pathways

Career pathways are discussed in more detail in section 6. However, if you refer to our career progression maps on page 37 (English version), and page 38 (Welsh version) you will see that both the Apprenticeship/Foundation Modern Apprenticeship and the Advanced/Modern Apprenticeship in Engineering form part of a complete interlocking vocational structure. Potentially, a young person can enter vocational training at 14 yrs of age while at school, through the Engineering Young Apprenticeship programme and transfer at 16 into either the Apprenticeship/Foundation Apprenticeship or Advanced Apprenticeship/Modern Apprenticeship. On completion, ex-apprentices can progress steadily up the vocational ladder through to University usually (part time) and on to technician or professional engineer status (Incorporated or Chartered engineer). Current Advanced/Modern Apprentices depending on their NVQ/technical certificate combinations are, on completion of their programme entitled to apply to the Institute of Engineering and Technology (IET) for “Engineering Technician” status.

SEMTA has also been working with the DIUS/DCSF and DCELLS on a Higher Apprenticeship/Modern Apprenticeship programme. While this is only a pilot in England and Wales at this stage, the programme provides NVQ 4, Foundation degree, Key Skills and meets approximately 75% of the requirements to become an Incorporated Engineer. This programme would provide excellent progression opportunities from either framework and is designed to be used, either by young people or adults.

3.1.6 Statistical Data and Projections

On page 18 there are tables indicating starts and in training figures for both Apprenticeship/Foundation Modern apprenticeship and Advanced Apprenticeship/Modern Apprenticeship during the periods August to July 2003/4 and 2004/5. There are also tables on engineering completion rates, and these rates in comparison with other frameworks (page 19-20).

From the figures you can see that the overall number of starts in training fell by 3% for Apprenticeship/Foundation Modern Apprenticeship and 28% for Advanced/Modern Apprenticeship from 2003/4 to 2004/5. While the Apprenticeship/Foundation Modern Apprenticeship reduction of 3% is to be noted, we are very concerned about the 28% reduction in Advanced/Modern Apprenticeship starts and have been busy addressing the root causes.

- Insufficient marketing of frameworks during this period to employers, especially Advanced/Modern Apprenticeships.
- Poor careers advice in schools, resulting in less candidates entering training at

higher levels.

- Reduction in financial provision available from local LSCs on provider training contracts, especially for Advanced/Modern Apprenticeships as these are expensive.
- Reduced funding for 19+ year olds.
- Employers not perceiving the need to train at higher levels, despite predictions of shortages.

Starts and Average in Learning August 2003 to July 2004

England	Total starts	Average in Learning	Comments
Apprenticeship	6377	8392	Source LSC
Advanced Apprenticeship	6875	19543	
Wales			
Foundation Modern Apprenticeship	393	548	Source DCELLS
Modern Apprenticeship	671	2023	

Starts and Average in Learning August 2004 to July 2005

England	Total starts	Average in Learning	Comments
Apprenticeship	6036	10,360	Source LSC
Advanced Apprenticeship	4804	17403	
Wales			
Foundation Modern Apprenticeship	548	499	Source DCELLS
Modern Apprenticeship	621	1558	

Apprenticeship / Foundation Modern Apprenticeship completion rates 2003/4 – 2004/5

	2003-04			2004-05		
	Leavers	Completers	Completers as %	Leavers	Completers	Completers as %
Wales	312	6	2%	395	107	27%
England	4036	1413	35%	5154	2474	48%
Combined total	4348	1419	33%	5549	2581	47%

Advanced Apprenticeship / Modern Apprenticeship

Completion rates 2003/4 – 2004/5

	2003-04			2004-05		
	Leavers	Completers	Completers as %	Leavers	Completers	Completers as %
Wales	636	235	37%	843	438	52%
England	6597	2507	38%	6158	3202	52%
Combined total	7233	2742	38%	7001	3640	52%

Completion % for Apprenticeship/Foundation Modern apprenticeship – top ten frameworks

Top 10 Apprenticeships

	2002-03	% = completers	2003-04	% = completers	▲ ▼	2004-05	% = completers	▲ ▼
Hospitality	16861	17.2%	17242	25%	7.8%	15261	38%	13%
Business Administration	14829	31.7%	15058	36%	4.3%	13412	49%	13%
Retail	13245	20.5%	11180	24%	3.5%	8794	35%	11%
Customer Services	10515	22.7%	10926	31%	8.3%	10301	45%	14%
Hairdressing	9269	29.9%	11306	32%	2.1%	11888	44%	12%
Health and Social Care	6182	13.2%	6944	13%	-0.2%	6289	22%	9%
Construction	5890	17.1%	9129	22%	4.9%	11475	41%	19%
Early Years and Education	3967	18.8%	5934	15%	-3.8%	6640	36%	21%
Engineering	3486	27.0%	4036	35%	8.0%	5154	48%	13%
Motor Industry	3129	17.0%	4239	19%	2.0%	4587	36%	17%

* Those sectors highlighted in red show a higher % in their Apprenticeship completion rates than in Engineering

Completion % for Advanced/Modern Apprenticeship- top ten frameworks (Nos) England: Advanced Apprenticeship Statistics

Top 10 Advanced Apprenticeships

	2002-03	% = completers	2003-04	% = completers	▲ ▼	2004-05	% = completers	▲ ▼
Engineering	6476	51.3%	6597	38%	-13.3%	6158	52%	14%
Motor Industry	5484	42.0%	6223	25%	-17.0%	5740	43%	18%
Business Administration	5433	32.5%	4213	27%	-5.5%	3249	44%	17%
Customer Services	5285	22.5%	4135	24%	1.5%	3580	32%	8%
Hospitality	5281	15.5%	4861	13%	-2.5%	4003	23%	10%
Hairdressing	3634	32.3%	2583	31%	-1.3%	1965	28%	-3%
Early Years and Education	3615	29.0%	4112	22%	-7.0%	3702	21%	-1%
Construction	3541	25.8%	3436	21%	-4.8%	2693	35%	14%
Health and Social Care	3451	24.1%	3204	20%	-4.1%	2365	22%	2%
Retail	2227	11.1%	1407	16%	4.9%	1006	21%	5%

* The above data shows that the Engineering sector has had the highest completion rates for Advanced Apprenticeships for 3 consecutive years

Starts and completions targets for 2006 to 2009

It is reasonable to expect that we could curtail the drop off in starts on Advanced Apprenticeships/Modern Apprenticeships that we have experienced in the last three years by taking the actions described at the start of 3.1.6. The table below indicates the year on year targets required to achieve this objective.

Apprenticeships numbers have not declined as markedly as those of AA/MA with a 3% reduction over the same period. However, our Sector Skills Agreement tells us that level 2 jobs in engineering will decline over the next 3 to 5 years. Under these circumstances we believe it would be sensible for the market to find its own level. Therefore we would set a figure of 6,770 starts per year to be achieved by 2008.

Starts by year	2006	2007	2008	% increase over 3 years
Advanced/Modern Apprenticeship	5930	6480	7090	28%
Apprenticeship/Foundation Modern Apprenticeships	6646	6708	6770	3%

Completion rates:

Engineering frameworks suffer from many of the standard reasons for poor completion rates these being:

- young people being placed on the scheme, who lack the motivation to succeed in the world of engineering
- young people being placed on the scheme, who lack the qualifications and ability to undertake this form of engineering training
- inability and motivation to complete key skills, especially external assessments
- employers only supporting apprentice through the NVQ and technical cert, ignoring the key skill requirements
- poor training provider programme management especially monitoring the apprentice through the programme.
- lack of breadth of skills within SMEs restricting completion of the NVQ

We have a particular problem with careers advice in our sector as many careers professionals believe that engineering is less challenging as a career than many others, and so refer young people of lower ability into the engineering sector. This is particularly concerning as maths and science capability needs to be high in order to succeed.

Engineering completion rates remain one of the highest of any sector despite the rigour of our frameworks. We do not believe that compromising the specification of our frameworks is the way to achieve better completion rates as this would be counter productive to the sector. We have and continue to work with training providers, the Adult Learning Inspectorate, the National Forum of Engineering Centres to identify reasons for poor completion rates and address these. The National Manufacturing Academy will take an increasingly important role in co-ordinating best practice.

SEMTA supports the improvement in completion rates by:

- developing support materials to aid delivery
- working with the ALI and Estyn to highlight good practice and disseminate to providers
- negotiating adequate financial provision to support the implementation of frameworks
- working in partnership with the ETB to improve engineering careers education and guidance

3.1.7 Consultation Process

General arrangements

Responsibility for the development and operation of engineering apprenticeship frameworks lies with SEMTA's National Training Framework Committee (chaired by, and composed principally of employers). This committee meets on a bi-monthly basis to discuss operational and policy matters.

In addition, SEMTA holds a series of regular meetings with training provider organisations such as the National Federation of Engineering Centres (NFEC), the Confederation of Group Training Schemes (COGS) and the Association of Learning Providers (ALP).

As a Sector Skills Council, SEMTA has established thirteen Sub Sector Groups (SSGs) to represent all employers within its footprint, eight of which represent employers from the engineering sub-sectors. These are: Aerospace, Automotive, Electronics, Electrical, Maintenance, Marine, Mechanical and Engineered metals (casting and treatments). Framework designs/changes are disseminated to each of the engineering SSGs for comment. Sector Skills agreements have currently been developed within four of these engineering sub-sectors, and apprenticeship frameworks play a key role in the delivery of skills within these.

SEMTA's Awarding Body Forum also contributes to the consultation process. The forum was established by SEMTA some years ago and meets four times a year. All the "engineering" Awarding Bodies meet to discuss a range of qualifications, standards and framework issues.

Feedback from the regulators is also an important part of the consultation process. At SEMTA's request, the Adult Learning Inspectorate (ALI) has nominated an individual to liaise with SEMTA's National Training Framework Committee and provide specific feedback on engineering inspection activity, and to review and comment on any proposed changes to the frameworks.

Consultation arrangements

SEMTA felt it important to undertake a formal consultation as part of the framework review. The research was conducted between May 2006 and July 2006 and utilised a mix of primary and secondary data using both qualitative and quantitative research methods.

The full apprenticeship consultation report is appended to the framework document and describes in detail, the scope, survey methodology, respondent profile, findings and conclusions. What follows is a brief summary:

The primary aim the consultation was to obtain an objective view from employers, of the following SEMTA Apprenticeship Frameworks:

- Apprenticeship/Foundation Modern Apprenticeship in Engineering (Framework 106)
- Advanced Apprenticeship/Modern Apprenticeship in Engineering (Framework 106)
- Apprenticeship/Foundation Modern Apprenticeship in Industrial Applications (Framework 283)

Questionnaires were sent to a sample 377 companies that broadly reflected the range of engineering employers (predominantly SMEs) within England and Wales using the apprenticeship frameworks.

The questionnaire was designed to be quick and easy for employers to complete (to increase the response rate) and therefore was primarily quantitative. In addition, employers were given the option to complete the consultation by telephone.

In total, just under half the employers (160) responded to the consultation questionnaire. This is a particularly high response rate, given that the questionnaire was sent out at the start of peak holiday season and the engineering industry traditionally suffers from a poor response rate. Responses indicate that the reasons for the high number of returns are:

- employers value the opportunity to feed back into the engineering apprenticeship system
- SEMTA have traditionally created an environment in which all parties involved in apprenticeships communicate²

Satisfaction with apprenticeship programme overall:

- 91% of employers are very or fairly satisfied with the Advanced Apprenticeship/Modern Apprenticeship in Engineering
- 82% of employers are very or fairly satisfied with the Apprenticeship/Foundation Modern Apprenticeship in Engineering
- 80% of employers are very or fairly satisfied with the Apprenticeship/Foundation Modern Apprenticeship in Industrial Applications

Only 4% of employers are dissatisfied with the Advanced Apprenticeship/Modern Apprenticeship in Engineering and only 4% are dissatisfied with the Apprenticeship/Foundation Modern Apprenticeship in Engineering. Of these, none were dissatisfied with the framework components overall, but with the delivery. None are dissatisfied with the Apprenticeship in Industrial Applications (but there were only 9 respondents on this framework).

Whether apprentices employed at start of programme:

- 78% of companies employed their *current Advanced Apprentices/Modern Apprentices* at the start of their apprenticeship
- 68% of companies employed their *current Apprentices/Foundation Modern Apprentices* at the start of their apprenticeship
- In general, 90% of companies said they employ *Advanced Apprentices/Modern Apprentices* at the start of their apprenticeship and 4% part way through.
- In general, 80% of companies said they employ *Apprentices/Foundation Modern Apprentices* at the start of their apprenticeship and 12% part way through.

² Most recently, the launch of 'apprentice-feedback.com' - a national initiative to ensure that all engineering employers and training providers have access to a common *trainee feedback system* designed to help raise standards and improve trainee satisfaction

Of the small number of companies that employed their apprentice's part way through the programme, many felt that this was the best way to ensure that candidates were suitable and had been trained 'in the basics'.

Introduction to basic engineering at the start of training:

- 98% of the employers believed that apprentices should have an introduction to basic engineering at the start of their training. This forms the additional component as detailed in the framework.

Importance of the programme components:

Employers rated the various components of the programme as follows:

Introduction to engineering:	76% very important; 23% fairly important
Competence based element:	63% very important; 35% fairly important
Knowledge based element:	66% very important; 31% fairly important
Key skills:	42% very important; 39% fairly important
ERR	30% very important; 48% fairly important

Wider skills:

Working with others:	60% very important; 31% fairly important
Improving own learning, etc:	54% very important; 35% fairly important

Would a knowledge based element be of benefit (Industrial Applications)?

- 8 out of the 9 respondents replied that the introduction of a knowledge based element would be of benefit, and 5 of these thought that it should be delivered through a Technical Certificate (day release).

Conclusions

Employers are very supportive of the Engineering Apprenticeship/Foundation Modern apprenticeship and the Advanced Apprenticeship/Modern Apprenticeship Frameworks in their proposed form. The breadth of the frameworks means that they are also popular with companies outside SEMTA's engineering scope, as detailed below:

- pharmaceutical
- process & manufacturing
- environmental and land-based
- construction
- food & drink industries

In particular, the Performing Engineering Operations NVQ Level 2 (basic engineering training) specified in both apprenticeships is considered an essential part of arrangements and the most important component overall. Most employers highlighted the importance of health & safety and were satisfied that PEO adequately prepared apprentices for working in an engineering environment.

Employers believe strongly that all apprentices should be employed at the start of training. This is seen as a benefit to apprentices and employers because it increases apprentice confidence and commitment to the company.

Most employers believe the NVQ and Technical certificates are important within the frameworks and provide a solid foundation for working in the industry. The key skills of *communication* and *numeracy* are considered more relevant to engineering employers.

The overall importance rating of the wider keys skills (*working with others* and *improving own learning & performance*) amongst engineering employers is also very high. This is unsurprising given the emphasis on working in teams or cells within the sector.

Employer satisfaction is high for both engineering frameworks; although in some cases this could be improved though better communication between training providers and companies relating to training delivery issues.

The apprenticeship frameworks are kept relevant to employers' needs through constant communication. The recent changes to the PEO qualification (based on revised National Occupational Standards) mean that it can be tailored to cover specific job roles. In addition there is now has a technical pathway alongside the original craft route.

The addition of qualifications for aerial installers takes into account recent changes in digital technology. This will ensure that the correct skill levels will be achieved in time for the switch over of analogue to digital signals, between 2008 and 2012.

In conclusion we believe the consultation gives us a mandate to present the framework in its current form with the full backing of our employers.

4 Content of Framework

4.1 Competence Based Element

Competence based elements (NVQs at level 2) for the **Apprenticeship/Foundation Modern Apprenticeship** are listed within section **2.1** of this submission. (Please note that equivalent SVQs would also be acceptable). However if SVQs are used within the framework then they would not be funded by the LSC.

The full list of suitable NVQs at level 3 for the **Advanced Apprenticeship/Modern Apprenticeship** are listed within section **2.2** of this submission. (Please note that equivalent SVQs would also be acceptable). Again it must be noted that if SVQs are used within the framework then they would not be funded by the LSC.

SEMTA works closely with industry to identify and define the skills and knowledge requirements for the various occupations within each sub-sector. These competences are mapped to the overarching set of Engineering Competence Standards managed by OSC Eng (Occupational Standards Council for Engineering), which are used as a platform to develop specific National Occupational Standards (NOS).

The main utility of the National Occupational Standards is for the development of nationally recognised qualifications such as N/SVQs. For this purpose, further work is undertaken with industry representatives to group the appropriate units into qualification structures that are appropriate for use.

These qualification structures are made up of a number of mandatory units that all taking the qualification must complete, together with a range of optional units to give the qualification sufficient breadth to cover the variations across the sub-sectors for a given occupation or range of related occupations.

4.2 Knowledge Based Requirement - Technical Certificates at levels 2 & 3

The knowledge based element (technical certificates) for the **Apprenticeship/Foundation Modern Apprenticeship at level 2** are detailed in section **2.1** of this framework.

A full list of suitable technical certificates for the **Advanced Apprenticeship/Modern Apprenticeship at level 3** can be found in section **2.2** of this framework.

Technical Certificates focus on the knowledge and understanding which underpins the NVQ competencies and additional knowledge to facilitate progression to HE or higher levels of working. Technical certificates may also cover wider aspects of the occupation/sector as determined by SEMTA and agreed with the Awarding Bodies. They are a structured approach to teaching and assessment, including external assessment, and are usually delivered through a taught programme of 'off-the-job' learning. There may be instances where a candidate will be exempt from achievement of a technical certificate as part of their Apprenticeship programme, for example, if they have already achieved a vocational education award that is of a higher level higher than the technical certificate required by the framework. To avoid any difficulties at the point of claiming the certificate, providers must gain written agreement to any exemptions during the initial development phase of the apprentice's programme.

4.3 Key Skills

Key Skills

The Key Skills levels identified below state the minimum levels required within each apprenticeship. Candidates should be encouraged and given the opportunity to achieve higher level key skills if appropriate to their needs and abilities.

For the **Apprenticeship/Foundation Modern Apprenticeship in Engineering** the following key skills at the appropriate levels must be achieved:

- Application of Number Level 1
- Communication Level 1
- Information Technology Level 1
- Working With Others Level 2
- Improving Own Learning and Performance Level 2

For the **Advanced Apprenticeship/Modern Apprenticeship** the following key skills at the appropriate levels must be achieved:

- Application of Number Level 2
- Communication Level 2
- Information Technology Level 2
- Working With Others Level 2
- Improving Own Learning and Performance Level 2

Key Skills are essential skills that candidates need in order to function effectively as members of a flexible, adaptable and competitive workforce. However, those candidates who have previously achieved good grade qualifications in literacy, numeracy and/or computer skills need not be asked to attempt Key Skills in accordance with the regulatory bodies' guidelines. Please see the following statements below.

In England Key Skills requirements can be attained in three ways:

1. Through the key skills qualification, which is strongly recommended
2. Through a proxy qualification
3. Through a relaxation

Proxies

Proxy qualifications are those qualifications that have been agreed to assess the same knowledge and skills aspects as the Key Skills. Because of this overlap, candidates can claim exemption from all or part of particular Key Skills qualifications for up to three years from the date of the award of the specific accredited proxy qualifications. For full details of accredited proxy qualifications, please visit the QCA website: www.qca.org.uk

Relaxations

The relaxation ruling was introduced in September 2001 and allows candidates who started on an apprenticeship programme on or after the 1st September 2001, and who have achieved a good grade A*-C GCSE in English, Mathematics and/or ICT, to complete their frameworks without being required to take the level 2 (level 1 by default) Communication, Application of Number and /or IT Key Skills qualifications.

This also applies to those candidates who have achieved a GCE A/AS level at grade A-E in English Language, English Literature, English Language and Literature, Mathematics, Pure, Mathematics, Further Mathematics, ICT and/or Applied ICT.

For those apprentices registering on issue 9V4 achievement of the GCSE/A/AS level must be no longer than five years* before the date of registration onto the apprenticeship programme.

** NB. The Government extended the rule to five years for those apprentices registered on or after the 1st August 2004. This is not a retrospective change therefore apprentices who transfer to this version of the framework cannot take advantage of the extended length of time unless the framework they were previously registered against was issued on or after 1st August 2004.*

For further details on queries relating to both the proxy qualifications and the relaxation rule, please refer to the Key Skills Policy and Practice: Your Questions Answered document available from QCA, DfES and the LSC National Office.

Please note that the Key Skills external test is no longer compulsory in Wales.

4.4 Functional Skills

Functional skills in English, mathematics and information and communication technology (ICT) help people to gain the most out of life, learning and work.

The skills are learning tools that enable people:

- to apply their knowledge and understanding to everyday life
- to engage competently and confidently with others
- to solve problems in both familiar and unfamiliar situations
- to develop personally and professionally as positive citizens who can actively contribute to society.

Full information on the Functional Skills Standards can be downloaded from the Qualifications and Curriculum Authorities website.

The Functional Skills levels identified below state the minimum levels required within each apprenticeship. Candidates should be encouraged and given the opportunity to achieve higher level Functional Skills if appropriate to their needs and abilities. There are currently only three Functional Skills these being Mathematics; English; and ICT, therefore they need to be done in conjunction with appropriate Key skills, these being: Improving Own Learning Performance and Working With Others.

For the **Apprenticeship/Foundation Modern Apprenticeship in Engineering** the following Functional Skills at the appropriate levels must be achieved:

- Functional Skill: Mathematics Level 1
- Functional Skill: English Level 1
- Functional Skill: ICT Level 1

Plus the following Key Skills:

- Improving Own Learning and Performance Level 2
- Working with Others Level 2

For the **Advanced Apprenticeship/Modern Apprenticeship** the following Functional Skills at the appropriate levels must be achieved:

- Functional Skill: Mathematics Level 2
- Functional Skill: English Level 2
- Functional Skill: ICT Level 2

Plus the following Key Skills:

- Improving Own Learning and Performance Level 2
- Working with Others Level 2

Proxies and Relaxations

Please note: there are **no** proxies or relaxations for the Functional Skills

Functional Skills are only for use in England.

4.5 Additional Employer Requirements

The SEMTA **Engineering Apprenticeship/Foundation Modern Apprenticeship** has two distinct stages, the Initial Engineering Training stage and the Development stage.

Initial Engineering Training (IET) is intended to equip apprentices with basic engineering skills, knowledge and understanding. It provides a firm platform on which further work-based skills development can be developed.

All apprentices must complete the following three units from the NVQ level 2 Performing Engineering Operations (PEO) NVQ Level 2

- Unit 1: Working safely in an engineering environment
- Unit 2: Working efficiently and effectively in engineering
- Unit 3: Using and communicating technical information

OR

An alternative Initial Engineering Training programme (which will need to achieve the same outcomes and be of the same level as the PEO unit approach) agreed in writing with SEMTA, prior to commencing training on the Apprenticeship in Engineering.

The SEMTA Advanced Apprenticeship/Modern Apprenticeship has distinct stages, the Basic Engineering Training stage and the Development stage. The Basic Engineering Training stage defines the outcomes required to develop, in a safe environment, the broad range of skills and knowledge needed for a career in the industry, as well as an understanding of related skills, and a firm base from which to achieve the outcomes of the Development Stage.

Apprentices must complete the NVQ level 2 Performing Engineering Operations (PEO) as detailed below:

Candidates following the **Engineering Practices** pathway must complete the three mandatory assessment routes, **plus three more of the optional assessment routes** as detailed in the qualification structure.

Please note: There are 57 optional assessment routes listed in the qualification, therefore it is impractical to list them all here. Please refer to the new Performing Engineering Operations PEO NVQ level 2 qualification structure.

Mandatory Assessment routes

Unit 1: Working safely in an engineering environment

Unit 2: Working efficiently and effectively in engineering

Unit 3: Using and communicating technical information

Candidates following the **Technical Support** pathway must complete the three mandatory assessment routes detailed above **plus five more of the optional assessment routes**, as detailed in the qualification structure.

OR

An alternative Initial Stage Training agreed in writing by SEMTA prior to commencement

Adults – Post 25yrs - Apprenticeships

Adult Apprentices on the Apprenticeship programme are exempt from the need to complete the PEO units required above if they are able to demonstrate a minimum of three years industrial experience within a manufacturing or engineering environment at operator or equivalent level. This needs to be evidenced by a signed letter from the HR department detailing the period in question.

*Please note that under these circumstances the output NVQ cannot be Performing Engineering Operations NVQ Level 2

Adults – Post 25yrs – Advanced Apprenticeships

Adult apprentices on the Advanced Apprenticeship are exempt the need to complete the **PEO Engineering Practices Pathway (6 Units)** specified above if they are able to demonstrate a minimum of five years industrial experience within a manufacturing or engineering environment at level 2 (operator or equivalent level). This needs to be evidenced by a signed letter from their company HR department detailing the period in question.

Please note that there are no exemptions for adult apprentices following the **Technical Support Pathway** all must complete the full eight units as specified, these being the three mandatory assessment units detailed above plus five more of the optional assessment units as detailed in the qualification structure.

4.6 Employment Responsibilities and Rights

Employment Responsibilities and Rights (ERR) include material covering:

- The responsibilities and rights of workers (including Equal Opportunities and in Wales, Welsh Language legislation)
- The organisation, disciplines and representative structures of the industries concerned
- The impact on the sector of public law and policies.

For both the Apprenticeship/Foundation Modern Apprenticeship in Engineering and the Advanced Apprenticeship/Modern Apprenticeship in Engineering, our National Framework Committee has recommended that ERR is included in the induction and subsequent phases of the industrial period, and to this end SEMTA have produced ERR workbooks both for the apprentice and for their trainer.

ERR must be completed by the end of the Apprenticeship programme. On completion, the trainer or training provider must fill in the 'Confirmation of Completion' form contained within the ERR workbook. This has to be signed by the trainer and by a Director or senior manager of the employing organisation.

In order to obtain the final framework completion certificate, the ERR confirmation of completion form must be submitted with the Certificate Request Form, alongside all other corresponding evidence required.

5 Implementation of Framework

5.1 Employed Status: Apprenticeship/Foundation Modern Apprenticeship in Engineering

Apprentices on the programme should be either:

- Directly employed by an employer and on their payroll
- Based with an employer but not directly employed, and paid an allowance by the employer
- Based with a provider and placed with an employer who will provide work based learning opportunities

It is recommended that the apprentice has employed status, but it is recognised that there will be situations where this is not possible.

Irrespective of the status of the apprentice, when embarking on an apprenticeship programme there has to be a designated employer who agrees to provide the high quality work based training element. Therefore, it is essential that both the apprentice and employer be briefed on their respective responsibilities.

Employed Status: Advanced Apprenticeship/Modern Apprenticeship in Engineering

Apprentices in the 16-24 year old age bracket, on the programme, should be:

- Directly employed by an employer and on their payroll

Advanced Apprentices aged 25+ only

Apprentices in the 25+ year old age bracket should be directly employed and on the payroll, and have acquired a number of years experience within the engineering sector at level 2 before entry.

5.2 Entry Requirements

This framework does not impose any restrictions on entry such as minimum levels of qualification. However, for entry onto the programme candidates (16-24 and 25+) must be able to demonstrate the potential to achieve either NVQ Level 2 in the case of the Apprenticeship/Foundation Modern Apprenticeship or NVQ level 3, for the Advanced Apprenticeship/Modern Apprenticeship and have sufficient knowledge and ability to undertake training to achieve Key Skills or Functional Skills at levels 1 and 2 and a suitable Technical Certificate at either level 2 or 3 depending on the programme. As a guide, candidates who have 5 GCSEs at grades D or E would find the apprenticeship programme academically suitable while those at 'C' grade or above including maths and a science would be more suited for the Advanced Apprenticeship.

The prime responsibility for selection and recruitment of the apprentice lies with individual employers who will have a clear idea of their own requirements; however the training provider should provide professional advice and guidance to assist this process.

The frameworks embrace a wide range of levels and types of job and different career paths and therefore the broad principles of selection must be sufficiently flexible to allow employers to tailor them to meet their particular requirements.

As a general guide candidates should have the following skills and attributes:

- Self motivation to succeed within the engineering industry
- A reasonable level of numeracy and literacy
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people
- Willingness to work flexibly, encompassing both on and off-the-job environments

For existing employees in the 25+ age bracket, the employer would already have sufficient track record information on the individual including reports from their immediate supervisor/manager to make an objective judgement as to the candidates suitability for either of the programmes.

5.3 Minimum Duration of Training

The average length of stay for a 16-24 year old apprentice on the Apprenticeship/Foundation Modern Apprenticeship in the Engineering is 21 months. In practice, this is considered indicative only, as the apprentice's progress will depend on the achievement of the required competences.

The average length of stay for Advanced Apprentices/Modern Apprentices in the same age bracket is typically 42 months. In practice, this is also considered indicative as again the apprentices' progress will depend on the achievement of the required competence.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

5.4 Health and Safety

Health and Safety is a formal part of the induction training process and every apprentice should understand their responsibilities to protect themselves and other people. All partners involved in the implementation of apprenticeship programmes must adhere to their statutory responsibilities for Health and Safety as follows:

- A safe working environment for apprentices must be provided whilst they are at work or in training
- Appropriate training on Health and Safety in the workplace must be given to each apprentice
- Awareness of, and compliance with, legislation relating to the Health and Safety at Work Act 1974, the Working Time Regulations 1998 and any other relevant legislation must be demonstrated
- Certain engineering processes require additional Health and Safety training and the use of protective equipment. For example apprentices should wear hair nets to

secure their hair when working on rotating machinery. In addition safety specs or goggles must be worn in these circumstances. Welders should wear eye and face protection and protective overalls when carrying out welding operations. Apprentices should not be exposed to processes without appropriate Health and Safety training, PPE and close supervision.

- There are many specialist H&S requirements for carrying out engineering processes. These are chiefly grouped into the Provision and Use of Work Equipment Regulations 1998 that covers:
 - Bending/folding machines
 - Blow moulding machines
 - Die casting machines
 - Drilling machines
 - Drop hammer
 - Extruding machines
 - Flying shear press
 - Grinding machines
 - Guillotines
 - Lathes
 - Process line machines
 - Robotic systems
 - Saws
 - Spot welding machines
 - Steel coil slitting lines
 - Vacuum moulding machines

In many cases young people are prohibited from using certain machinery until they have reached 18yrs of age, have received appropriate training and are being closely supervised.

- The apprentice must be aware of and comply with their statutory responsibility for Health and Safety at work. This relates to their own safety and to the safety of others in the work place. They must also be aware of, and comply with, any additional Health and Safety procedures laid down by their employer/provider
- Local LSCs/DCELLS are responsible for monitoring the compliance of providers to their statutory Health and Safety obligations and will carry this out through their quality assurance procedures
- Providers will monitor the compliance of employers with Health and Safety statutory requirements

Risk assessment

Employers, as part of their statutory responsibilities under the Management of the Health and Safety at Work Regulations 1999, are required to:

- Assess the risk to the individual before they start work
- Take account of their inexperience and lack of awareness of existing or potential risks
- Address specific factors in the risk assessment

- Take account of the risk assessment in determining whether the individual should be prohibited from certain work activities, except where it is necessary for their training
- Ensure risks are reduced as far as reasonably practicable
- Ensure proper supervision is provided by a competent person
- Check their employer's liability insurance to ensure that no exclusions apply

5.5 Equality and inclusion

The LSCs/DCELLS has a statutory duty (Learning and Skills Act 2000, section 14) to have due regard to the need to promote equality of opportunity between people from different racial groups, men and woman, people with a disability and people without.

Whilst Equal Opportunities has been identified here under a separate heading, the principles relate to all those systems and procedures which have the potential to discriminate against apprentices at any point during the programme - from recruitment and selection and induction, through to successful completion.

There should be "open recruitment" of apprentices to the programme, which is available to anyone over the age of 16, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability who meet the stated selection criteria.

All partners involved in the delivery of the Advanced Apprenticeship in Engineering - local LSCs/DCELLS, providers, assessment centres and employers - must be committed to a policy of Equal Opportunities and must have a stated Equal Opportunities policy and procedures.

Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation, such as:

- The Sex Discrimination Act, 1975 (and 1986) and Code of Practice
- The Race Relations Act, 1976 and Code of Practice
- The Disability Discrimination Act, 1995 and Code of Practice
- EU Equal Treatment Framework Directive (2000/78)
- Race Relations (Amendment) Act 2000
- Special Educational Needs & Disability Act 2001 and Code of Practice
- Equal Pay Act 1970 and Code of Practice

The apprentices' knowledge about Equal Opportunities policies and procedures can be used as evidence for the Employment Responsibilities and Rights component of this framework.

5.6 Equal Opportunities monitoring procedures

Providers and employers will monitor Equal Opportunities policies and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.

Apprenticeship/Foundation Modern Apprenticeship in Engineering

No of Starts	2003/2004		2004/2005	
	England	Wales	England	Wales
Gender (f)	6.1%	11.5%	3.9%	12.6%
Ethnicity	5.7%	2.8%	4.7%	2.4%
Disability	6.7%	2.0%	9.3%	1.6%

Advanced Apprenticeship/Modern Apprenticeship in Engineering

No of Starts	2003/2004		2004/2005	
	England	Wales	England	Wales
Gender (f)	2.6%	2.8%	2.8%	3.2%
Ethnicity	3.7%	0.9%	3.8%	2.4%
Disability	4.1%	1.0%	5.2%	0.8%

Local LSCs/DCELLS have responsibility to monitor Equal Opportunities practices to ensure that providers meet the criteria specified in their quality management systems. This includes monitoring the representation of apprentices in terms of gender, ethnicity and disability to ensure that it reflects, as far as possible, the levels of representation within the local community.

SEMTA monitor Equal Opportunities, primarily by the analysis of the LSC/DCELLS statistical returns. Where questions arise concerning policy and practice, SEMTA will work closely with the local LSCs/DCELLS concerned to identify causes and to implement positive action where appropriate.

A current issue that we are finding difficult to address within frameworks is to raise the number of women and ethnic minorities entering the industry. We are working with employers to address this situation.

SEMTA are currently promoting the SET Woman's resource centre and WES on the SEMTA website. The Women's Resource Centre are involved in mentoring schemes, to encourage and support young women who have embarked on or are thinking of an engineering apprenticeship.

Our Young Apprenticeship programme that feeds the post-16 apprenticeship programme encourages both young women, and ethnic minorities to participate in apprenticeships. An example of this being Jaguar's YA scheme that has an all female cohort.

5.7 Transfer arrangements from previous framework

This framework should be operational on the 15th September 2008.

Registration onto the Apprenticeship/Foundation Modern Apprenticeship and the Advanced/Modern Apprenticeship framework Issue 9 version 5F will cease from the 14th September 2008.

Where the mandatory outcomes of a framework are changed as a result of a review, SEMTA will specify the dates the new framework will start and the cut off date for registration under the old framework. The decision to retain existing apprentices under the old framework, or transfer them onto the revised framework will be made in the best interests of the apprentice who, along with the other partners, will sign a new/revised Individual Apprenticeship Plan.

5.8 Monitoring Arrangements for the Framework

SEMTA will monitor the framework as follows:

- Regular analysis of the statistical data provided by the LSC and DCELLS
- Feedback from the membership on the National Training Framework Committee
- Feedback collected via regular dialogue with employers attending the eight Engineering Sector Strategy Groups (SSGs) advising SEMTA on its Sector Skills Agreement
- Feedback from training providers (Group Training Associations, Employer Providers, and Colleges)
- Inspection reports by ALI and Estyn and regular meetings with the ALI engineering lead inspector
- Data gained from framework evaluation exercises
- Data gained from National Trainee Feedback System

SEMTA also has an annual plan for the review of National Occupation Standards which will inform both the competence and knowledge based components of the framework. This work is ongoing, and provides the driving force to regularly review our frameworks to ensure they contain the latest developments on NOS.

6 Achievement and Progression

6.1 Certification

The successful apprentice depending on the programme undertaken will receive either:

- An Apprenticeship (England) or a Foundation Modern Apprenticeship (Wales) in Engineering completion certificate from SEMTA
- or
- An Advanced Apprenticeship (England) or a Modern Apprenticeship (Wales) in Engineering completion certificate from SEMTA

This is separate from, and in addition to, those certificates awarded for the achievement of the individual components of the framework e.g. NVQ, Key Skills and Technical Certificate.

Providers are responsible for claiming the completion certificate from SEMTA and for providing evidence of completion of the mandatory and additional outcomes. They are also responsible for ensuring that the apprentice receives the completion certificate when awarded by SEMTA.

SEMTA's requirements for claiming the completion certificate:

- A Certificate Request Form can be obtained from the SEMTA website: www.semta.org.uk under the heading 'Useful Documents' within the 'Training Frameworks and Development' section.
- The Certification Request Form must be completed (please refer to the guidance document which accompanies the Certificate Request Form) and signed by the centre coordinator (applicable to EAL centres) or main centre contact, and returned for each individual apprentice, together with supporting evidence verifying that all mandatory outcomes have been met. It is the provider's responsibility to ensure that all relevant documentation is submitted.

If the above procedures are adhered to, certificates should be received within 15 working days from receipt of the application form.

Note: Please ensure that all apprentices are registered onto the appropriate engineering framework at commencement of training not only with the local LSC/DCELLS but also with SEMTA. You can locate a copy of the Registration Request Form from the SEMTA website: www.semta.org.uk under the heading 'Useful Documents' within the 'Training Frameworks and Development' section.

6.2 Progression

The Apprenticeship/Foundation Modern Apprenticeship in Engineering Framework provides the best possible preparation to achieving trained operator/semi-skilled status within the industry. It may also, where appropriate, provide positive progression to advanced apprenticeship or higher level work.

On completion of the framework the apprentice will be deemed suitable for one of the occupations listed in section 3.3.

The Advanced Apprenticeship/Modern Apprenticeship in Engineering Framework provides the best preparation to achieve skilled craftsperson or technician level status within the industry. It may also, where appropriate, provide positive progression to Higher Education or Higher levels of working responsibility.

Early progression can be to job roles in a variety of technical support functions to assist the work of technologists, assist in the design, development and maintenance of electronic systems, perform technical quality assurance related tasks, support the work of technical teams, and perform various other technical support roles. Job titles such as electronics technician, quality assurance technician, commissioning engineer, engineering draughtsperson, maintenance craftsperson/Technician and team leader would be typical in the sectors of: aerospace; automotive; ship building; manufacturing; materials; and electrical/electronics sectors.

The term engineering technician is a professionally recognised level of skill and experience and entitles a person to registration with the engineering council. SEMTA has formed a strategic partnership with the Institute of Engineering and Technology (IET) and the Institute of Mechanical Engineers (IMechE) to accredit appropriate apprentices with “Engineering Technician” status. Companies and training providers should encourage apprentices to become associates of the institute and progress to full membership when training is complete. Further progression to incorporated and chartered status is possible for those that undertake further academic qualifications and with additional working experience and training.

Some apprentices may progress to Further or Higher Education, such as BTEC HNC or HND in mechanical, electrical or electronic or engineering or other specialisms dependant on their job role. Other options would be Foundation degrees, for example selected Airbus Advanced Apprentices undertake the Aeronautical Manufacturing Foundation Degree while Jaguar apprentices study for an Engineering Systems Foundation Degree. Following these, further honours degree programmes at BEng and MEng are not uncommon.

All apprentices have the option of working towards flexible progression routes, i.e. undertaking:

- Units of another related NVQ
- A further NVQ at an appropriate level
- Further technical certificates or vocational education Courses
- Specific In-house training courses
- Multi-skilling or flexible manufacturing courses
- Lean manufacturing
- Development of competencies in other vocational areas such as quality, design, supervision etc

The apprentices’ knowledge about career pathways, information sources and the names of relevant professional bodies is contained within the Employment Responsibilities and Rights workbook ERR 01 that is supplied to every apprentice.

The complete infrastructure of engineering progression routes both into and out of the Apprenticeship/Foundation Modern Apprenticeship and the Advanced Apprenticeship/Modern Apprenticeship are illustrated in English and Welsh below.

Which way into Engineering?

ROUTES TO AN ENGINEERING CAREER

Use this chart to help you map out your career path into engineering.

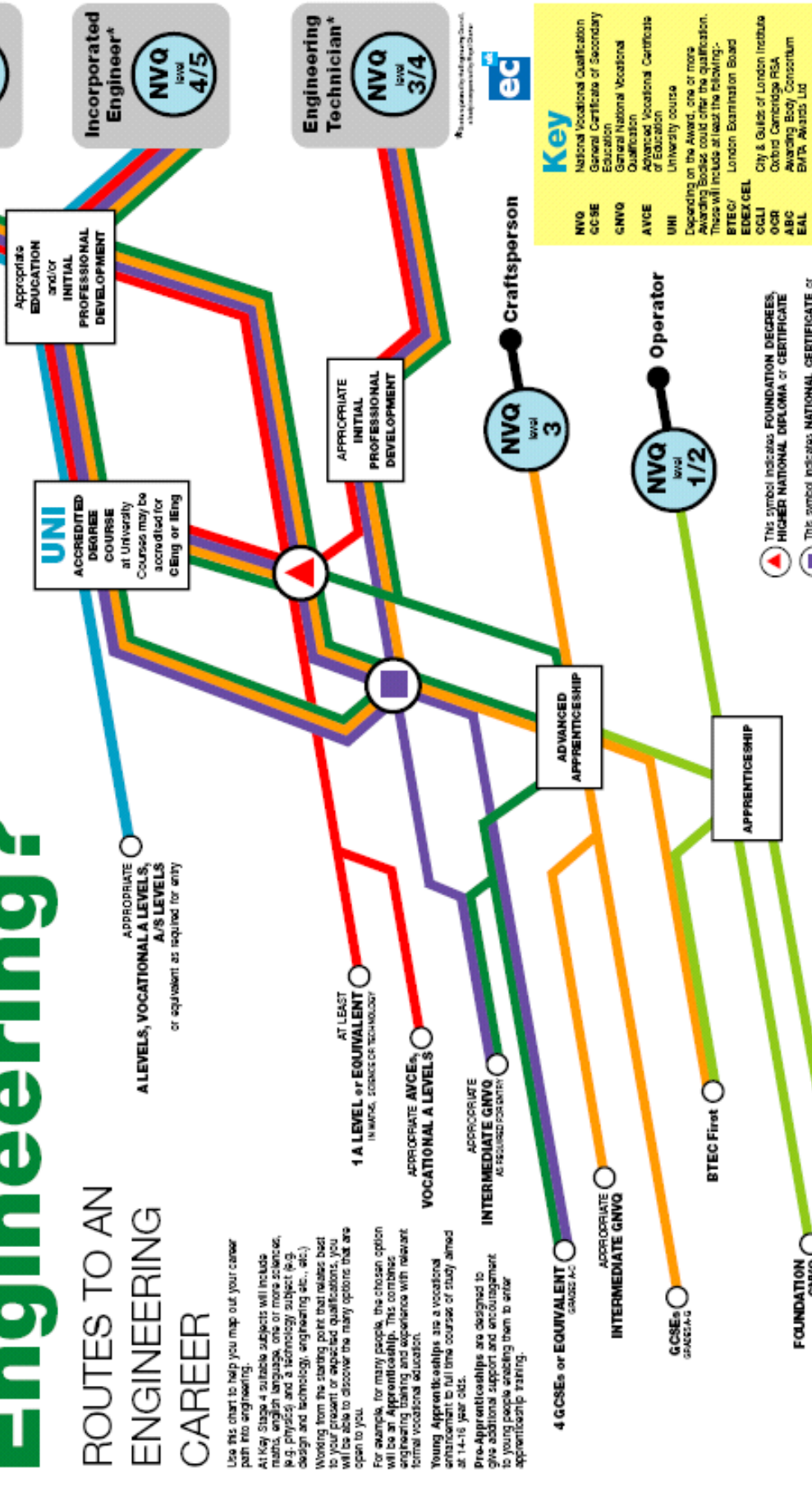
All Key Stage 4 suitable subjects will include maths, english language, one or more sciences, (e.g. physics) and a technology subject (e.g. design and technology, engineering etc., etc.). Working from the starting point that relates best to your present or expected qualifications, you will be able to discover the many options that are open to you.

For example, for many people, the chosen option will be an Apprenticeship. This combines engineering training and experience with relevant formal vocational education.

Young Apprenticeships are a vocational enhancement to full time course of study aimed at 14-16 year olds.

Pre-Apprenticeships are designed to give additional support and encouragement to young people enabling them to enter apprenticeship training.

Graduate Apprenticeships may be available in your area to help you link higher level academic study with work based learning.



Pa ffordd i faes Peirianeg?

LLWYBRAU I YRFA MEWN PEIRIANEG

Canlyniad o'r ymchwil a gynhyrwyd yn ymchwil ym 2007 sy'n dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.

Canlyniad o'r ymchwil a gynhyrwyd yn ymchwil ym 2007 sy'n dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.

Canlyniad o'r ymchwil a gynhyrwyd yn ymchwil ym 2007 sy'n dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.

Mae'r ymchwil hon yn dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.

Peirianegydd Siartre-dig*
NVQ i'r gradd **4/5**

Peirianegydd C-ortfforddi g*
NVQ i'r gradd **4/5**

Technegydd Peirianeg
NVQ i'r gradd **3/4**

ADURYSO A HŶN DUDUR CYMHOLOG PROFFESIYNOL CYMRANEGOL
PRIFYSGOL

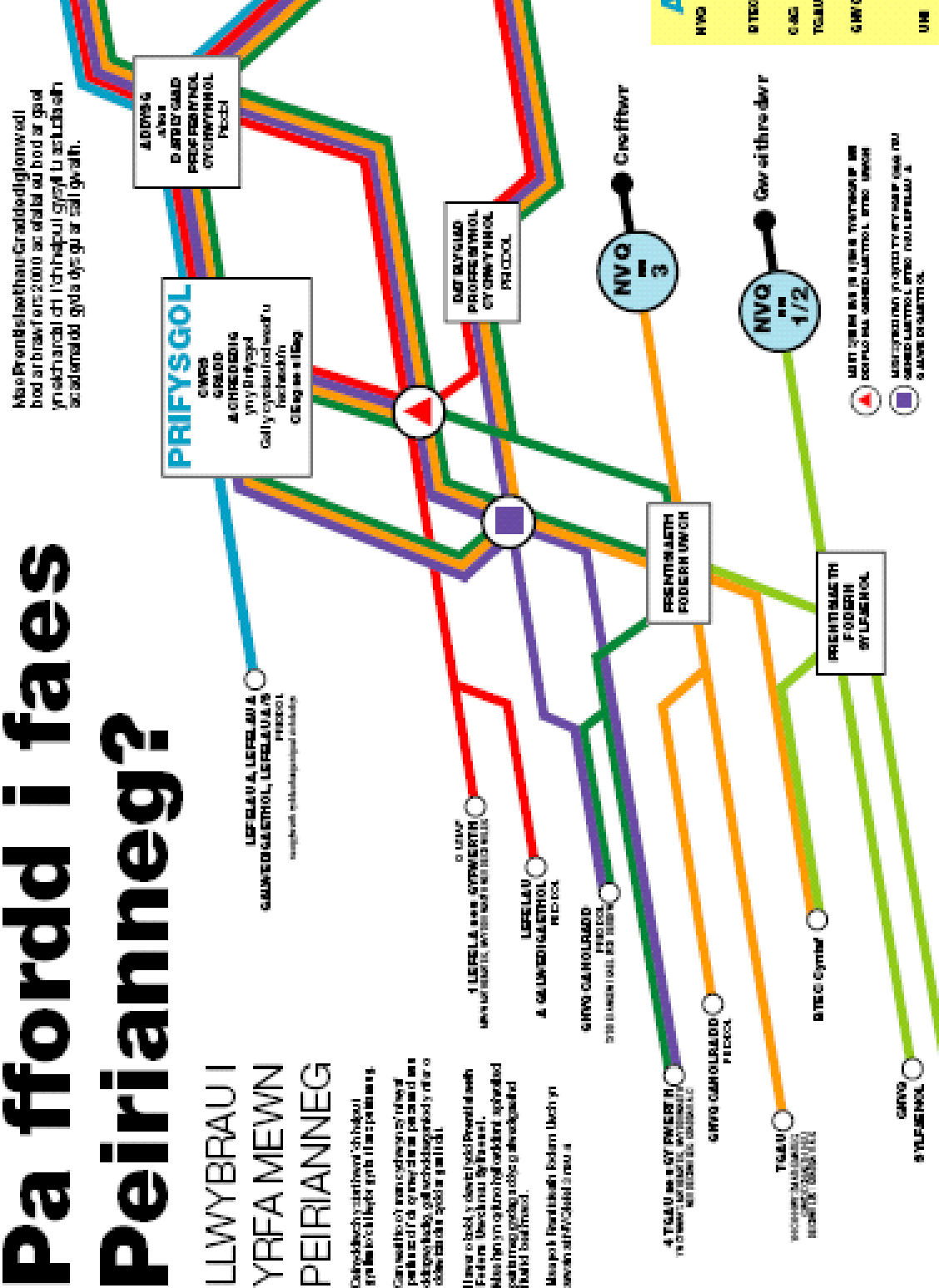
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DUDUR CYMHOLOG PROFFESIYNOL CYMRANEGOL
PRIFYSGOL

NVQ i'r gradd **3**
Creifffwr

NVQ i'r gradd **1/2**
Gwr a'i thre-dwr

MAE YMCHWIL HON yn dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.



0800 282167

www.en-gin-uity.e-rg.uk

MAE YMCHWIL HON yn dangos bod y gwaith yn ymchwil a'i fforddau cyffwrdd i astudio'n academaidd gyda dds-gu ar sail gwaith.

7.1 Fact Sheet

Apprenticeship/Foundation Modern Apprenticeship in Engineering

What's involved?

An apprentice can expect to be doing work based learning with an employer and to be paid, either a wage if they are employed, or an allowance. The apprenticeship will include a National Vocational Qualification, Key Skills and a 'knowledge based element' or technical certificate as listed below.

Competence Based Elements	Knowledge Based Element	Key Skills
<p>Initial Engineering Training - PEO NVQ level 2</p> <p>Plus: an NVQ level 2 from the following:</p> <ul style="list-style-type: none"> Performing Engineering Operations Business Improvement – Techniques Mechanical Manufacturing Engineering Fabrication and Welding Engineering Aeronautical Engineering Engineering Maintenance and Installation Materials Processing and Finishing Electrical and Electronics Servicing Marine Engineering Railway Engineering Engineering Technology Maintenance Support Instrument Servicing 	<p>Technical certificate or equivalent</p> <ul style="list-style-type: none"> EAL Intermediate Certificate in Engineering and Technology EAL in Cycle Maintenance EAL Intermediate Certificate in Clocks and Watches EAL Certificate in Business Improvement Techniques ABC Certificate in Welding and Fabrication CITY & GUILDS Certificate in Engineering CITY & GUILDS Certificate in Aeronautical Engineering CITY & GUILDS Certificate in Electrotechnical Technology CITY & GUILDS Certificate in Vehicle Maintenance and Repair CITY & GUILDS Diploma in Vehicle Maintenance and Repair Edexcel First Certificate in Engineering Edexcel BTEC First Diploma in Engineering Edexcel BTEC First Diploma in Vehicle Technology (Motorsport) IMI Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) 	<p>Key Skills</p> <ul style="list-style-type: none"> Application of Number Level 1 Communication Level 1 Information Technology Level 1 Working With Others Level 2 Improving Own Learning and Performance Level 2

The decision on which competence based and knowledge elements will be studied will be made

by the employer and/or training provider in discussion with the apprentice.

Entry requirements:

These frameworks do not impose any restrictions on entry such as minimum levels of qualification. However for entry onto the programme, candidates (16-24 and 25+) must be able to demonstrate the potential to achieve NVQ Level 2 and have sufficient knowledge and ability to undertake training to achieve Key Skills at level 1/2 and a able to undertake a suitable technical certificate at either level 2 .

Furthermore, candidates should have:

- Self motivation to succeed within the engineering industry
- A reasonable level of numeracy and literacy
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people

Minimum Periods of Training:

The average length of stay for a 16-24 year old apprentice on the Apprenticeship/Foundation Modern Apprenticeship in the Engineering is 21 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences

What type of job might an apprentice be doing?

- Aerospace assembly - component sub-assembly, airframe structures, engine modules, accessories
- Automotive assembly – new vehicle build, engine and transmission assembly, in car electronics assembly, control and power systems assembly.
- Casting – ferrous and non-ferrous metals - investment casting, gravity, high, and low pressure die casting, lost wax. Roles/activities - Mould preparation, pouring, scurfig, & inspection
- Electrical engineering assembly of components, sub-assemblies, assembly and testing of harnesses
- Electronics engineering: assembly of components, sub-assemblies or whole assembly of: radio and television (analogue and digital), microwave, industrial, telecommunications, computers etc.
- Lift maintenance - servicing of lift power, control systems, and mechanical structure at level 2

How long does the apprenticeship take to complete?

The average length of stay for a 16-24 year old apprentice on the Apprenticeship/Foundation Modern Apprenticeship in the Engineering is 21 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

Career progression after completing this apprenticeship

The Apprenticeship/Foundation Modern Apprenticeship in Engineering Framework provides the best possible preparation to achieving trained operator status within the industry. It may also, where appropriate, provide positive progression to Advanced apprenticeship or higher level work.

Early progression can be to job roles in a variety of areas including component assembly and manufacture including welding and fabrication, maintenance and engineering testing in the sectors of automotive, ship building, manufacturing, materials, aerospace and electrical / electronics sectors.

Framework developed by:

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7.2 Fact Sheet

Advanced Apprenticeship/Modern Apprenticeship in Engineering		
What's involved?		
<p>An apprentice can expect to be doing work based learning with an employer and to be paid, either a wage if they are employed, or an allowance. The apprenticeship will include a National Vocational Qualification, Key Skills and a 'knowledge based element' or technical certificate as listed below.</p>		
Competence Based Element	Knowledge Based Element	Key Skills
<p>Initial Engineering Training - PEO NVQ level 2 (additional employer requirements).</p> <p>Plus: an NVQ level 3 from the following:</p> <ul style="list-style-type: none"> • Engineering Woodworking, Pattern and Model Making • Installation and Commissioning • Engineering Maintenance • Fabrication and Welding Engineering • Automotive Engineering • Aeronautical Engineering • Mechanical Manufacturing Engineering • Materials Processing and Finishing • Engineering Technical Support • Marine Engineering • Electrical and Electronics Servicing • Electrical and Electronics Engineering • Engineering Toolmaking • Railway Engineering * • Engineering Technology Maintenance • Engineering Leadership 	<p>Technical Certificates</p> <ul style="list-style-type: none"> • EAL Advanced Diploma in Engineering and Technology • EAL Advanced Diploma in Engineering and Technology (progressive) • EAL Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches • EAL Diploma in cycle Maintenance • ABC Diploma in Welding and Fabrication • CITY & GUILDS Certificate in Aeronautical Engineering • CITY & GUILDS Certificate in Electrotechnical Technology • CITY & GUILDS Certificate in Engineering • CITY & GUILDS Certificate in Vehicle Maintenance and Repair * • CITY & GUILDS Diploma in Vehicle Maintenance and Repair * • Edexcel National Award in Engineering • Edexcel BTEC National Award in Communications Technology • Edexcel BTEC National Certificate in Communications Technology • Edexcel BTEC National Certificate in Engineering • Edexcel BTEC National Diploma in Engineering • Edexcel BTEC National Diploma in Communications Technology 	<p>Key Skills</p> <ul style="list-style-type: none"> • Application of Number Level 2 • Communication Level 2 • Information Technology Level 2 • Working With Others Level 2 • Improving Own Learning and Performance Level 2

	<ul style="list-style-type: none"> • Edexcel BTEC National Certificate in Electrical / Electronic Engineering • Edexcel BTEC National Diploma in Electrical / Electronic Engineering • Edexcel BTEC National Certificate in Mechanical Engineering • Edexcel BTEC National Diploma in Mechanical Engineering • Edexcel BTEC National Certificate in Operations and Maintenance Engineering • Edexcel BTEC National Diploma in Operations and Maintenance Engineering • Edexcel National Certificate in Aerospace Engineering • Edexcel National Diploma in Aerospace Engineering • Edexcel BTEC National Certificate in Manufacturing Engineering • Edexcel BTEC National Diploma in Manufacturing Engineering • IMI Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) • Edexcel BTEC National Certificate in Vehicle Repair & Technology • Edexcel BTEC in Vehicle Technology (motorsport) 	
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The decision on which competence based and knowledge elements will be studied will be made by the employer and/or training provider in discussion with the apprentice.

Entry requirements:

The Advanced Apprenticeship/Modern Apprenticeship does not impose any restrictions on entry such as minimum levels of qualification. However for entry onto the programme, candidates (16-24 and 25+) must be able to demonstrate the potential to achieve either NVQ Level 3 and have sufficient knowledge and ability to undertake training to achieve Key Skills at level 2 and a suitable technical certificate at level 3.

Furthermore, candidates should have:

- Self motivation to succeed within the engineering industry
- A reasonable level of numeracy and literacy
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people

Minimum Periods of Training:

The average length of stay for Advanced Apprentices/Modern Apprentices in the same age range (16yrs to 24 yrs), is typically 42 months. In practice, this is considered indicative as again the apprentices' progress will depend on the achievement of the required competences.

What type of job might an apprentice be doing?

On completion of the Advanced Apprenticeship/Modern Apprenticeship in Engineering apprentices will be able to enter the engineering workforce as either craft-persons or technicians. Typical craft roles equate to "skilled status", after a period of consolidation. Typical roles might be: Maintenance fitter, skilled machinist, tool-room craftsman, skilled fitter, electrical /electronics craft-person.

Technicians will progress to a variety of technical support functions to assist the work of technologists, assist in the design, development and maintenance of electronic systems, perform technical quality assurance related tasks, support the work of technical teams, and perform various other technical support roles.

How long does the apprenticeship take to complete?

The average length of stay for a 16-24 year old apprentice on the Advanced Apprenticeship Engineering is 42 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

Career progression after completing this apprenticeship

The Apprenticeship/Foundation Modern Apprenticeship in Engineering Framework

provides the best possible preparation to achieving trained operator status within the industry. It may also, where appropriate, provide positive progression to Advanced apprenticeship or higher level work.

Early progression can be to job roles in a variety of areas including. component assembly and manufacture including welding and fabrication, maintenance and engineering testing in the sectors of automotive, ship building, manufacturing, materials, aerospace and electrical / electronics sectors.

Framework developed by:

SEMTA: the SSC for Science, Engineering & Technology

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Annex A

Apprenticeship / Foundation Modern Apprenticeship in

Engineering

Framework Code

Framework Issue Number

1	0	6		9 V6
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Implementation date

Name of SSC/SSB

SEMTA

Competence Based Element

Title	N/SVQ Level	Qualification Reference Number	Awarding Body	<i>Occupational Sector (to be completed by LSC National Office)</i>	Funding Rate 16-18 <i>(to be completed by LSC National Office)</i>	Funding Rate 19+ <i>(to be completed by LSC National Office)</i>
Performing Engineering Operations	2	500/1474/2	City & Guilds			
Business-Improvement Techniques	2	500/3057/7	City & Guilds			
Mechanical Manufacturing Engineering	2	100/4428/0	City & Guilds			
Aeronautical Engineering	2	100/4048/1	City & Guilds			
Fabrication And Welding	2	100/3927/2	City & Guilds			

Engineering Maintenance and Installation	2	100/4532/6	City & Guilds			
Engineering Technical Support	2	500/3941/6	City & Guilds			
Electrical and Electronic Servicing	2	100/4226/X	City & Guilds			
Railway Engineering *	2	100/4432/2	City & Guilds			
Engineering Technology Maintenance Support	2	100/2957/6	City & Guilds			
Materials Processing and Finishing	2	100/4789/X	City & Guilds			
Performing Engineering Operations	2	500/1448/1	EAL			
Business-Improvement Techniques	2	500/2154/0	EAL			
Mechanical Manufacturing Engineering	2	100/3571/0	EAL			
Fabrication And Welding	2	100/3611/8	EAL			
Engineering Technical Support	2	500/3755/9	EAL			
Aeronautical Engineering	2	100/3965/X	EAL			
Engineering Maintenance and Installation	2	100/4531/4	EAL			

Electrical and Electronic Servicing	2	100/4895/9	EAL			
Materials Processing and Finishing	2	100/4569/7	EAL			
Marine Engineering	2	100/5077/2	EAL			
Performing Engineering Operations	2	500/2466/8	Edexcel			
Performing Engineering Operations	2	500/2953/8	PAA/VQ SET			
Mechanical Manufacturing Engineering	2	500/1719/6	ETCAL			
Fabrication and Welding Engineering	2	100/4346/9	ETCAL			
Performing Manufacturing Operations	2	100/4225/8	ETCAL			
Performing Engineering Operations	2	500/1719/6	ETCAL			

* Please note that the City and Guilds NVQ level 2 in Railway Engineering is only for use by Network Rail and London Transport apprentices.

Knowledge Based Element

Title of knowledge based qualification	N/SVQ Level	Qualification Reference Number	Awarding Body	Number of Guided Learning Hours (GLH)	Funding Rate 16-18 (to be completed by LSC National Office)	Funding Rate 19+ (to be completed by LSC National Office)
Intermediate Certificate in Engineering and Technology	2	100/2953/9	EAL	300		
Intermediate Certificate in Clocks and Watches	2	100/1647/8	EAL	60		
Certificate in Cycle Maintenance	2	500/1200/9	EAL	150		
Certificate in Business Improvement Techniques	2	100/4397/4	EAL	120		
Certificate in Aeronautical Engineering (please refer to footnote 1 below)	2	100/4311/1	City & Guilds	180		
Certificate in Electrotechnical Technology	2	100/3569/2	City & Guilds	500		
Certificate in Vehicle Maintenance and Repair (please refer to footnote 2 below)	2	100/5342/6	City & Guilds	460		
Certificate in Engineering	2	500/1726/3	City & Guilds	300		
Diploma in Vehicle Maintenance and Repair (please refer to footnote 2 below)	2	100/5343/8	City & Guilds	575		

BTEC first Certificate in Engineering	2	100/5670/1	Edexcel	180		
BTEC first Diploma in Engineering	2	100/5671/3	Edexcel	360		
BTEC first Diploma in Vehicle Technology (Motorsport)	2	100/5781/X	Edexcel	360		
IMI Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) (please refer to footnote 2 below)	2	100/5568/X	IMI	460		
Certificate in Welding and Fabrication	2	500/2176/X	ABC	240		

Footnote 1

Please note that this qualification is only for use by the MoD.

Footnote 2

Please note that these qualifications are only for use by the MoD or by organisations undertaking specialist applications i.e. body repair/maintenance.

Key Skills

Title of Key Skill	Level	Funding Rate 16-18 <i>(to be completed by LSC National Office)</i>	Funding Rate 19+ <i>(to be completed by LSC National Office)</i>
Communication	1		
Application of Number	1		
Information and Communication Technology	1		
Working With Others	2		
Improving Own Learning and Performance	2		

Annex A

Advanced Apprenticeship / Modern Apprenticeship in

Engineering

Framework Code Framework Issue Number

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Implementation date

Name of SSC/SSB

SEMTA

Competence Based Element

Title	Level	Qualification Reference Number	Awarding Body	<i>Occupational Sector (to be completed by LSC National Office)</i>	Funding Rate 16-18 <i>(to be completed by LSC National Office)</i>	Funding Rate 19+ <i>(to be completed by LSC National Office)</i>
Engineering Woodworking, Pattern and Model Making	3	100/3573/4	EAL			
Installation and Commissioning	3	100/4152/7	EAL			
Engineering Maintenance	3	100/3157/1	EAL			
Fabrication and Welding Engineering	3	100/2949/7	EAL			
Automotive Engineering	3	100/3572/2	EAL			

Aeronautical Engineering	3	100/2954/0	EAL			
Mechanical Manufacturing Engineering	3	100/2951/5	EAL			
Electrical and Electronic Servicing	3	100/4896/0	EAL			
Electrical and Electronic Engineering	3	100/4951/4	EAL			
Engineering Tool making Railway Engineering*	3	100/5642/7	EAL			
Metal Processing and Allied Operations	3	100/4224/6	EAL			
Marine Engineering	3	100/4765/7	EAL			
Engineering Leadership	3	500/3841/2	EAL			
Engineering Technical Support	3	100/4766/9	EAL			
Engineering Woodworking, Pattern and Model Making	3	100/3911/9	City & Guilds			
Installation and Commissioning	3	100/4779/7	City & Guilds			
Engineering Maintenance	3	100/3790/1	City & Guilds			
Aeronautical Engineering	3	100/4049/3	City & Guilds			

Mechanical Manufacturing Engineering	3	100/3192/3	City & Guilds			
Material Processing and finishing	3	100/4499/1	City & Guilds			
Engineering Technical Support	3	500/3805/9	City & Guilds			
Electrical and Electronic Servicing	3	100/4227/1	City & Guilds			
Railway Engineering*	3	100/4433/4	City & Guilds			
Engineering Technology Maintenance	3	100/2958/8	City & Guilds			
Mechanical Manufacturing Engineering	3	100/3659/3	ETCAL			
Engineering Maintenance	3	100/4180/1	ETCAL			
Fabrication and Welding Engineering	3	100/4263/5	ETCAL			
Aeronautical Engineering	3	100/4508/9	ETCAL			
Electrical and Electronic Engineering	3	100/5685/3	ETCAL			
Engineering Technical Support	3	100/5686/5	ETCAL			

* Please note that the City and Guilds NVQ level 3 in Railway Engineering is only for use by Network Rail and London Transport apprentices.

Knowledge Based Element

Title of knowledge based qualification	Level	Qualification Reference Number	Awarding Body	Number of Guided Learning Hours (GLH)	Funding Rate 16-18 (to be completed by LSC National Office)	Funding Rate 19+ (to be completed by LSC National Office)
Advanced Diploma in Engineering and Technology	3	100/3226/5	EAL	600		
Advanced Diploma in Engineering and Technology (Progressive)	3	100/3298/8	EAL	750		
Advanced Certificate in the repair, restoration and conservation of clocks and watches	3	100/2647/2	EAL	1690		
Diploma in cycle Maintenance	3	500/1646/5	EAL	260		
Diploma in Fabrication and Welding Practice	3	500/2423/1	ABC	480		
Certificate in Aeronautical Engineering	3	100/3712/3	City & Guilds	450		
Certificate in Electrotechnical Technology	3	100/3602/7	City & Guilds	250		
Certificate in Engineering	3	100/2987/4	City & Guilds	480		
Certificate in Vehicle Maintenance and Repair (please refer to footnote 1 below)	3	100/5344/X	City & Guilds	460		

Diploma in Vehicle Maintenance and Repair (please refer to footnote 1 below)	3	100/5345/1	City & Guilds	575		
BTEC National Award in Engineering	3	500/1761/5	Edexcel	360		
BTEC National Award in Communications Technology	3	500/1827/9	Edexcel	360		
BTEC National Certificate in Communications Technology	3	500/1829/2	Edexcel	720		
BTEC National Certificate in Engineering	3	500/1760/3	Edexcel	720		
BTEC National Diploma in Engineering	3	500/1749/4	Edexcel	1080		
BTEC National Diploma in Communications Technology	3	500/1828/0	Edexcel	1080		
BTEC National Certificate in Electrical / Electronic Engineering	3	500/1631/3	Edexcel	720		
BTEC National Diploma in Electrical / Electronic Engineering	3	500/1632/5	Edexcel	1080		
BTEC National Certificate in Mechanical Engineering	3	500/1554/0	Edexcel	720		
BTEC National Diploma in Mechanical Engineering	3	500/1557/6	Edexcel	1080		
BTEC National Certificate in Operations and Maintenance Engineering	3	500/1556/4	Edexcel	720		
BTEC National Diploma in Operations and Maintenance Engineering	3	500/1553/9	Edexcel	1080		

BTEC National Certificate in Aerospace Engineering	3	500/1856/5	Edexcel	720		
BTEC National Diploma in Aerospace Engineering	3	500/1855/3	Edexcel	1080		
BTEC National Certificate in Manufacturing Engineering	3	500/1558/8	Edexcel	720		
BTEC National Diploma in Manufacturing Engineering	3	500/1555/2	Edexcel	1080		
BTEC National Certificate in Vehicle Maintenance and Repair (please refer to footnote 1 below)	3	100/1388/x	Edexcel	720		
BTEC National Award In Vehicle Technology (motorsport)	3	500/2322/6	Edexcel	360		
Diploma in Vehicle Maintenance and repair (Light Vehicle, Heavy Vehicle, Motorcycle) (please refer to footnote 1 below)	3	100/5570/8	IMI	460		

Footnote 1

Please note that these qualifications are only for use by the MoD or by organisations undertaking specialist applications i.e. body repair/maintenance.

Key Skills

Title of Key Skill	Level	Funding Rate 16-18 <i>(to be completed by LSC National Office)</i>	Funding Rate 19+ <i>(to be completed by LSC National Office)</i>
Communication	2		
Application of Number	2		
Information and Communication Technology	2		
Working With Others	2		
Improving Own Learning and Performance	2		

Annex B

NVQ / Technical Certificates Combinations - Apprenticeship / Foundation Modern Apprenticeship in Engineering

NVQs at Level 2	Associated Technical Certificates
Performing Engineering Operations	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Cycle Maintenance ▪ Certificate in Engineering ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ BTEC First Diploma in Vehicle Technology (Motorsport)
Business-Improvement Techniques	<ul style="list-style-type: none"> ▪ Certificate in Business-Improvement Techniques
Mechanical Manufacturing Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering
Fabrication and Welding Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Aeronautical Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering
Instrument Servicing	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering
Technical Services	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology

	<ul style="list-style-type: none"> ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Engineering Maintenance and Installation	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Cycle Maintenance ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Materials Processing and Finishing	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering
Electrical and Electronic Servicing	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Marine Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering

Railway Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering
Engineering Technology Maintenance Support	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)

NVQ / Technical Certificate Combinations - Advanced Apprenticeship /Modern Apprenticeship in Engineering

NVQs	Associated Technical Certificates
Engineering Woodworking, Pattern and Model Making	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Aeronautical Engineering ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Installation and Commissioning	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical/Electronic Engineering ▪ BTEC National Diploma in Electrical/Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering

	<ul style="list-style-type: none"> ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Engineering Maintenance	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Instrument Servicing	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Fabrication and Welding	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology

Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Automotive Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Aeronautical Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Mechanical Manufacturing Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication

	<ul style="list-style-type: none"> ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Materials Processing and Finishing	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Engineering Technical Support	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering

	<ul style="list-style-type: none"> ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Marine Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Electrical and Electronic Servicing	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Electrical and Electronic Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic

	<p>Engineering</p> <ul style="list-style-type: none"> ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Engineering Toolmaking	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Railway Engineering	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering

	<ul style="list-style-type: none"> ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering
Engineering Technology Maintenance	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Advanced Certificate in the Repair, Restoration and Conservation of Clocks and Watches ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Diploma in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering ▪ BTEC National Certificate in Manufacturing Engineering ▪ BTEC National Diploma in Manufacturing Engineering ▪ BTEC National Certificate in Vehicle Repair and Technology ▪ BTEC National Diploma in Vehicle Repair and Technology ▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
Engineering Leadership	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Engineering ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering

	<ul style="list-style-type: none">▪ BTEC National Certificate in Mechanical Engineering▪ BTEC National Diploma in Mechanical Engineering▪ BTEC National Certificate in Operations and Maintenance Engineering▪ BTEC National Diploma in Operations and Maintenance Engineering▪ BTEC National Certificate in Aerospace Engineering▪ BTEC National Diploma in Aerospace Engineering▪ BTEC National Certificate in Manufacturing Engineering▪ BTEC National Diploma in Manufacturing Engineering▪ BTEC National Certificate in Vehicle Repair and Technology▪ BTEC National Diploma in Vehicle Repair and Technology▪ Diploma in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle)
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Annex C

Associated Job Roles - Apprenticeship /Foundation Modern Apprenticeship in Engineering

NVQs Level 2	Associated Technical Certificates – Level 2	Associated Job Roles
Performing Engineering Operations	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Cycle Maintenance ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ BTEC First Diploma in Vehicle Technology (Motorsport) 	<ul style="list-style-type: none"> ▪ Engineering fitter Semi- skilled ▪ Cycle Maintenance mechanic ▪ Welder/Fabricator's mate ▪ Aero-engine fitter (semi-skilled) ▪ Electrical fitter's mate ▪ CAD operator ▪ Electronics service rep ▪ Repair technician ▪ Production operator ▪ As above ▪ Motorsport technician
Business-Improvement Techniques	<ul style="list-style-type: none"> ▪ Certificate in Business-Improvement Techniques 	<ul style="list-style-type: none"> ▪ Production process control operator
Mechanical Manufacturing Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering 	<ul style="list-style-type: none"> ▪ Manufacturing operator ▪ Manufacturing expeditor ▪ Welder /Fabricator (semi skilled) ▪ Aero engine fitter (semi skilled) ▪ Fitters mate air-con manufacture ▪ Production CAD programmer ▪ Line Maintenance fitter Electrical /Electronics ▪ Production planner ▪ Quality Control Operator
Fabrication and Welding Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication 	<ul style="list-style-type: none"> ▪ Production fabricator (semi-skilled) ▪ Production control operator ▪ Welding inspector

	<ul style="list-style-type: none"> ▪ Certificate in Aeronautical Engineering ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) 	<ul style="list-style-type: none"> ▪ Jig welder ▪ CNC Fabrication operator ▪ Welding equipment maintenance fitter (semi skilled) ▪ Vehicle body repair technician ▪ Vehicle body welder (semi skilled) ▪ CNC cutter ▪ As above ▪ Military vehicle repair fitter/welder (semi- skilled)
Aeronautical Engineering	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Business-Improvement Techniques ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Progression Award in Electrical and Electronics Servicing ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering 	<ul style="list-style-type: none"> ▪ Airframe riveter ▪ Workflow control operator ▪ Welder/fabricator aero engine pipework ▪ Aero engine strip and wash fitter ▪ CNC operator ▪ Avionics fitter (semi skilled) ▪ Aero engine fitter/tester's mate ▪ Aero engine component assembly
Instrument Servicing	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering ▪ Certificate in Vehicle Maintenance and Repair (Light Vehicle, Heavy Vehicle, Motorcycle) 	<ul style="list-style-type: none"> ▪ Watch service technician ▪ Instrument fabricator (semi skilled) ▪ Avionics instrument calibration technician ▪ Instrument repair fitter Electrical/Electronic (semi skilled) ▪ Automotive instrument repairer ▪ Manufacturing calibration control technician ▪ Metrology operator ▪ Repair of instruments and control systems – military vehicles
Engineering Maintenance and Installation	<ul style="list-style-type: none"> ▪ Intermediate Certificate in Engineering and Technology ▪ Certificate in Cycle Maintenance ▪ Certificate in Business-Improvement Techniques 	<ul style="list-style-type: none"> ▪ Plant maintenance fitter's mate ▪ Cycle maintenance technician ▪ Planned maintenance controller

	<ul style="list-style-type: none"> ▪ Certificate in Welding and Fabrication ▪ Certificate in Electrotechnical Technology ▪ Progression Award in Electrical and Electronics Servicing ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC First Certificate in Engineering ▪ BTEC First Diploma in Engineering 	<ul style="list-style-type: none"> ▪ Maintenance welder (semi skilled) ▪ Plant fitter heating & ventilation (semi skilled) ▪ Lift control systems maintenance engineer ▪ Military vehicle fitter (semi skilled) ▪ As above ▪ Plant maintenance planner ▪ Commissioning fitter (semi skilled)
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Associated Job Roles - Advanced Apprenticeship /Modern Apprenticeship in Engineering

NVQs At Level 3	Associated Technical Certificates	Associated Job Roles
Engineering Maintenance	<ul style="list-style-type: none"> ▪ Advanced Diploma in Engineering and Technology ▪ Advanced Diploma in Engineering and Technology (Progressive) ▪ Advanced Certificate in the Repair Restoration and Conservation of Clocks and Watches ▪ Certificate in Welding and Fabrication ▪ Certificate in Aeronautical Engineering ▪ Certificate in Electrotechnical Technology ▪ Certificate in Vehicle Maintenance and Repair ▪ Diploma in Vehicle Maintenance and Repair ▪ BTEC National Award in Engineering ▪ BTEC National Award in Communications Electronic Engineering ▪ BTEC National Certificate in Communications Electronic Engineering ▪ BTEC National Diploma in Communications Electronic Engineering ▪ BTEC National Certificate in Electrical / Electronic Engineering ▪ BTEC National Diploma in Electrical / Electronic Engineering ▪ BTEC National Certificate in Mechanical Engineering 	<ul style="list-style-type: none"> ▪ Manufacturing maintenance engineer ▪ Maintenance controller ▪ Watchmaker/ Clockmaker ▪ Maintenance welder Skilled ▪ Aircraft service engineer (un-licensed) ▪ Plant maintenance engineer H&V ▪ Specialist vehicle maintenance engineer ▪ As above ▪ Facilities manager ▪ Telecommunications maintenance / service engineer ▪ As above ▪ As above ▪ Micro electronics maintenance engineer ▪ Electronics Systems maintenance engineer ▪ Facilities maintenance engineer

	<ul style="list-style-type: none"> ▪ BTEC National Diploma in Mechanical Engineering ▪ BTEC National Certificate in Operations and Maintenance Engineering ▪ BTEC National Certificate in Aerospace Engineering ▪ BTEC National Diploma in Aerospace Engineering 	<ul style="list-style-type: none"> ▪ Systems maintenance engineer (hydraulics, pneumatics) ▪ As above ▪ Repair and overhaul engineer (aircraft engines) ▪ As above
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