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Llywodraeth Cymru Welsh Government

1204 Welsh Apprenticeship Pathway

in

Advanced Manufacturing Engineering

The content of this Pathway has been agreed by ENGINUITY. These are the only apprenticeship Pathways in the Engineering sector approved for use in Wales that are eligible for Welsh Government funding.

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LEARNING PROGRAMME CONTENT

The Learning Programme provision shall comprise of three mandatory elements:

- Qualifications,
- Essential Skills
- On/off the job training

The total minimum credit value required for the: Level 4: Advanced Manufacturing is 245 credits.

ENTRY REQUIREMENTS

General Entry Requirements for - Level 4 – Advanced Manufacturing (Covering Aerospace/ Mechanical / Electrical / Electronics/Automotive/Maintenance/Wind Generation/Marine/Space Engineering/Rail Engineering)

Employers wish to attract applicants who have an interest in working in a manufacturing/ engineering environment at technician level and who come from a diverse range of backgrounds with a wide range of experience, achievements or qualifications. Please note: Applicants for this pathway need to be 18+ years

Entry to this pathway is flexible so that applicants:

- may have variety of qualifications such as A Levels, Certificate/Diploma in Engineering, Apprenticeship in Engineering or
- without formal qualifications can show, possibly through a portfolio, that they have the potential to complete this apprenticeship, through having previously worked in the sector at Level 3 or
- they are currently employed in the sector and are looking for personal development and career progression.

Learners who have completed the Welsh Baccalaureate may have completed units or short courses which will provide underpinning knowledge towards the Apprenticeship. This will be assessed during an initial assessment allowing Recognition of Prior Learning (RPL), where appropriate.

Prior experience in the sector

Applicants that are already working in the sector or who have recently worked in the sector, can apply to have their experience formally recognised by an awarding organisation and this will count towards the qualification(s) in this pathway.

Additional Learning Needs

ENGINUITY as the certifying authority are willing to accept a lower level of essential skills achievement on completion of all other elements of the apprenticeships for learners who can evidence disability. This would include either a previously issued statement of Special Educational Needs (SEN) or an Education, Health Care Plan (EHC).

It is expected that these learners would benefit from additional support through Individual Development Plans or Learning and Skills Plans developed and agreed with the employer and provider. The employer and provider must reasonably expect that the apprentice will be able to successfully achieve all other aspects of the apprenticeship requirements to become occupationally competent.

Evidence of SEN statements or EHC plans will need to be submitted when applications for completion certificates are made.

Specific Entry Conditions for - Level 4 – Advanced Manufacturing (covering Aerospace/ Mechanical / Electrical/ Electronics/Automotive/Maintenance/Wind Generation/Marine/Space Engineering/Rail Engineering)

There are no additional requirements other than the general entry conditions

APPRENTICESHIP PATHWAY LEARNING PROGRAMME(S)

Level 4: Advanced Manufacturing

Qualifications

Participants must achieve one of the following competence and knowledge qualifications below.

Level 4 NVQ Extended Diploma in Engineering Manufacture								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
EAL	C00/0549/7	107	1070	Competence	English Only			

Level 4 NVQ Diploma in Engineering Manufacture									
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)				
EAL	C00/0549/6	80	800	Competence	English Only				

Foundation Degree FdEng in Aeronautical Engineering (Manufacture)							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
Glyndwr University	N/A	240	2400	Knowledge	English Only		

Foundation Degree FdEng Aircraft Maintenance								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Glyndwr University	N/A	N/A	N/A	Knowledge	English Only			

Foundation Degree FdEng in Aeronautical and Manufacturing Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Swansea University via Coleg Cambria	N/A	240	2400	Knowledge	English Only			

Pearson BTEC Level 4 Higher National Certificate in Engineering								
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Pearson	C00/1163/6	120	1200	Knowledge	English Only			

Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
Pearson	C00/1164/5	120	1200	Knowledge	English Only		

Foundation Degree FdEng in Advanced Manufacturing Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Swansea University via Coleg Cambria	N/A	N/A	N/A	Knowledge	English Only			

Pearson BTEC Level 5 Higher National Diploma in Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Pearson	C00/1163/7	240	2400	Knowledge	English Only			

Pearson BTEC Level 5 Higher National Diploma in Aeronautical Engineering							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
Pearson	C00/1235/1	240	2400	Knowledge	English Only		

Foundation Degree FdEng in Mechanical Engineering							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
Swansea University via Gower College Swansea	N/A	240	2400	Knowledge	English Only		
University of Wales: Trinity St Davids (via Pembrokeshi re College)	N/A	N/A	N/A	Knowledge	English Only		

HNC Operations Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of Wales - Newport	N/A	150	1500	Knowledge	English Only			

HNC Mechanical Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of South Wales	N/A	120	1200	Knowledge	English Only			
University Of Wales Trinity St David	N/A	120	1200	Knowledge	English Only			

HNC Mechanical Technology							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
Glyndwr University via Coleg Cambria	N/A	1 <i>5</i> 0	1500	Knowledge	English Only		
Glyndwr University via Coleg Menai	N/A	1 <i>5</i> 0	1500	Knowledge	English Only		
Glyndwr University	N/A	150	1500	Knowledge	English Only		

Foundation Degree FdEng in Industrial Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Glyndwr University	N/A	N/A	N/A	Knowledge	English Only			

Foundation Degree in Process Operations and Maintenance								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of Wales: Trinity St Davids (via Pembrokeshi re College)	N/A	N/A	N/A	Knowledge	English Only			

HND Mechanical Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of South Wales	N/A	240	2400	Knowledge	English Only			
University of Wales (Trinity St Davids)	N/A	240	2400	Knowledge	English Only			

University Certificate in Mechatronics							
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)		
University of South Wales	N/A	60	N/A	Knowledge	English Only		

HNC in Advanced Manufacturing Operations									
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)				
University of Wales (Trinity St Davids)	N/A	120	1200	Knowledge	English Only				

Foundation Degree in Electrical/ Electronic Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Swansea University via Gower College Swansea	N/A	240	2400	Knowledge	English Only			

HNC Electrical/ Electronic Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of Wales: Trinity St Davids	N/A	160	1600	Knowledge	English Only			
Glyndwr University via Coleg Cambria	N/A	1 <i>5</i> 0	1500	Knowledge	English Only			

HNC Electrical and Electronic Technology								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
Glyndwr University via Coleg Menai	N/A	150	1500	Knowledge	English Only			
Glyndwr University	N/A	150	1500	Knowledge	English Only			

HNC Electrical and Electronic Engineering								
Awarding Body	Awarding Body	Awarding Body	Awarding Body	Awarding Body	Awarding Body			
University of South Wales	N/A	120	1200	Knowledge	English Only			
University Of Wales Trinity St David	N/A	120	1200	Knowledge	English Only			

HND in Electrical and Electronic Engineering								
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)			
University of Wales (Trinity St Davids	N/A	240	2400	Knowledge	English Only			
University of South Wales	N/A	240	2400	Knowledge	English Only			

Foundation Degree in Automotive Engineering						
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)	
University of South Wales	N/A	N/A	N/A	Knowledge	English Only	

HNC Engineering					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
University of Wales, Newport	N/A	160	1600	Knowledge	English Only

HND Engineering						
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)	
University of Wales, Newport	N/A	240	2400	Knowledge	English Only	

HNC Instrumentation Engineering					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
University of Wales: Trinity St Davids (via SMU campus)	N/A	160	1600	Knowledge	English Only

HND Power Systems Engineering						
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)	
University of Wales: Trinity St Davids)	N/A	160	1600	Knowledge	English Only	

Foundation Degree Instrumentation and Electrical Engineering					
Awarding Body	Qualification No.	Credit Value	Total Qualification Time	Competence / Knowledge / Combined	Qualification Assessment Language(s)
University of Wales: Trinity St Davids (via Pembrokeshi re College)	N/A	N/A	N/A	Knowledge	English Only

Essential Skills Wales (ESW)

Essential Skills Wales qualifications assessment languages are English-Welsh

Level 4: Aerospace	Level	Minimum Credit
		Value
Communication	2	6
Application of Number	2	6
Digital Literacy	2	6

On/Off the Job Training

Programme	Minimum On the Job Training Hours	Minimum Off the Job Training Hours
Level 4: Advanced Manufacturing	461	814

On/Off the Job Qualification details (Minimum Credit & Hours)

245 credits for competence and knowledge.

The total amount of learning hours which includes both on and off-the-job training for the Advanced Manufacturing Apprenticeship is 1275.

Competence = 461 Knowledge = 480 ESW = 180 (3x 60) Mentoring = 154 (1hr a week for 154 weeks) Programme duration approximately 42 months depending on the qualification and unit options selected.

On/Off the Job Essential Skills details (Minimum Credit & Hours)

- 6 credits / 60 GLH Level 2 Essential Skills Wales Communication
- 6 credits / 60 GLH Level 2 Essential Skills Wales Application of Number
- 6 credits / 60 GLH Level 2 Essential Skills Wales Digital Literacy

OTHER ADDITIONAL REQUIREMENTS

Applicants for this Pathway need to be 18+ years

JOB ROLES

The latest version of the job roles and job descriptions for this Pathway can be found <u>here</u> Link to summary/Platform

PROGRESSION

Progression from the Level 4 Apprenticeship – Advanced Manufacturing (covering Aerospace/Mechanical/ Electrical - Electronics/Automotive/Maintenance/Wind Generation/Marine/ Space Engineering/ Rail Engineering)

Progression routes into the programme include those who have:

- A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths and Science grade C (new equivalent grade 4) or above or
- a Welsh Baccalaureate or
- completed a Level 3 Engineering Apprenticeship or
- have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing or
- previous work experience or employment in engineering at Level 3 or
- other relevant qualifications, experience or skills as given in the entry conditions.

Progression from this pathway for those who have completed a Higher Apprenticeship in Advanced Manufacturing Engineering :

- progression to the new Degree Apprenticeship in Manufacturing Engineering at Level 6
- progression to the Higher Apprenticeship pathway for Advanced Manufacturing Engineering at Level 6 Please note that there is no Level 5 Higher Apprenticeship programme
- employment as a technician in aerospace/mechanical/Electrical-Electronics/ Automotive/Maintenance/Wind Generation/Marine/Space/Rail engineering in a variety of job roles and functions (see job roles).

This Apprenticeship provides excellent preparation towards professional registration as an Engineering Technician and progression to Incorporated Engineer registration via the Degree Apprenticeship or Level 6 pathways. It may also, where appropriate, provide progression to a range of honours degrees.

Professional recognition The Institution of Mechanical Engineers (IMechE), the Institution of Engineering and Technology (IET) and the Royal Aeronautical Society (RAeS) recognise that this apprenticeship pathway provides the necessary skills, knowledge and experience to allow apprentices to apply for Engineering Technician status within their institutions. The apprenticeship does not confer automatic membership of any of these institutions as an Engineering Technician. Apprentices are free to apply to the institution of their choice and engage the process of registration.

Please note each institution will charge a registration fee, details of these are available through the weblinks below.

www.aerosociety.com www.theiet.org www.imeche.org

EQUALITY & DIVERSITY

It is important that apprenticeship Pathways are inclusive and can demonstrate an active approach to identifying and removing barriers to entry and progression. Pathways should advance equality of opportunity between persons who share protected characteristics and those persons who do not as identified in the Equality Act 2010.

The Protected characteristics identified in the Equality Act are age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, pregnancy and maternity. Marriage and civil partnership is also included although only in respect of the requirement to eliminate discrimination in employment.

Training providers and employers MUST also comply with the other duty under the Equality Act 2010 to ensure that applicants are not discriminated against in terms of entry to the industry based upon those nine protected characteristics.

Enginuity recognise the business benefits of having apprentices from a wide variety of diverse backgrounds to contribute to the talent pool. In particular the sector faces an aging workforce and the probability of skill shortages, therefore, we must look to attract new entrants from a much more diverse recruitment pool.

We are committed to ensuring that equality and diversity drives all aspects of apprentice selection and recruitment and recognise that this is a challenge in a sector which is traditionally white and male-dominated:

- Process and Manufacturing Industries workforce historically has a poor image and a misconception that jobs in these industries are carried out in dark, dirty and potentially dangerous environments. On the contrary, nowadays Process and Manufacturing Industries are very high tech and largely controlled by sophisticated computer technology.
- Science, engineering and technology women make up 50% of the labour market, yet they make up less than 20% of the labour market in science, engineering and technology despite the Women into Science and Engineering projects run in the past.

We are taking the following actions to help address these imbalances:

- Signing up to the Government's United Kingdom Resource Centre (UKRC) leading body for advanced gender equality in science, engineering and technology and the CEO's charter in a bid to step up female recruitment
- Enginuity's careers and qualifications centre includes an emag and articles encouraging more women into science and engineering
- Statement on our website that "Enginuity Apprenticeships Service encourages and supports equal opportunities in the engineering and manufacturing industry. Applications for apprenticeship positions are encouraged from all sections of the community to ensure the industry's workforce reflects the communities in which companies are based. Applications from people with disabilities are encouraged, however it is recognised that the nature of some employment may limit access for those with certain disabilities".
- Attend national careers fairs to promote science and engineering to a wide audience.

Apprenticeships are seen as a vital route to encourage and facilitate, a greater diversity of individuals into the industry, therefore entry conditions to this pathway are extremely flexible and mentoring has been included to contribute towards increasing retention and achievement rates.

Enginuity expects providers and employers to comply with the Equality Act 2010 to ensure that applicants are not discriminated against in terms of entry to and promotion within the sector.

Enginuity will monitor take up and achievement through the Higher Apprenticeship Steering Group and take steps to address any barriers to take up and achievement as part of our Sector Qualifications Strategies.

EMPLOYMENT RESPONSIBILITIES AND RIGHTS (ERR)

Employment Responsibilities and Rights (ERR) is no longer compulsory. But it is recommended that all apprentices (especially the 16 years -18 year group) receive a company induction programme.

RESPONSIBILITIES

It is the responsibility of the Training Provider and Employer to ensure that the requirements of this pathway are delivered in accordance with the Welsh Government Apprenticeships Guidance.

Further information may be obtained from:

Welsh Government DfES-ApprenticeshipUnit@gov.wales