

apprenticeship FRAMEWORK

Engineering Manufacture (Wales)

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Engineering Manufacture (Wales)

Contents

Framework summary	4
Framework information	20
Contact information	21
Revising a framework	23
Purpose of the framework	25
Entry conditions	32
Level 2: Foundation Apprenticeship in Engineering Manufacture (Operator and Semi-skilled)	38
Pathway 1: Aerospace	39
Pathway 2: Marine (Ship, Yacht, Boat building, maintenance and repair)	51
Pathway 3: Mechanical Manufacturing Engineering	63
Pathway 4: Engineering Maintenance and Installation	75
Pathway 5: Fabrication and Welding	89
Pathway 6: Materials Processing and Finishing	102
Pathway 7: Engineering Technical Support	113
Level 3: Apprenticeship in Engineering Manufacture (Craft and Technician)	124
Pathway 1: Aerospace	125
Pathway 2: Marine (Ship building, maintenance and repair)	146
Pathway 3: Mechanical Manufacturing Engineering	161
Pathway 4: Marine (Yacht and Boat building, maintenance and repair)	181
Pathway 5: Engineering Maintenance	193
Pathway 6: Fabrication and Welding	218
Pathway 7: Materials Processing and Finishing	236
Pathway 8: Engineering Technical Support	252
Pathway 9: Electrical and Electronic Engineering	274
Pathway 10: Installation and Commissioning	292
Pathway 11: Engineering Toolmaking	310
Pathway 12: Automotive	327

Contents continued...

Pathway 13: Engineering Woodworking, Pattern and Modelmaking	345
Pathway 14: Engineering Leadership	359
Equality and diversity	375
On and off the job training	377
Essential employability skills	386

Framework summary

Engineering Manufacture

Foundation Apprenticeship in Engineering Manufacture (Operator and Semi-skilled)

Pathways for this framework at level 2 include:

Pathway 1: Aerospace

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Aeronautical Engineering

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - City & Guilds Level 2 Diploma in Aircraft Maintenance (Civil Aircraft)

K3 - EAL Level 2 Diploma in Engineering Technology

K4 - City & Guilds Level 2 Certificate in Aircraft Maintenance (Military Aircraft)

K5 - City & Guilds Level 2 Diploma in Aircraft Engineering

K6 - City & Guilds Level 2 Diploma in Engineering - Military Marine and Air Engineering

K7 - City & Guilds Level 2 Diploma in Engineering - Military Air Engineering (Survival Equipment)

K8 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K9 - EAL Level 2 Certificate in Engineering Technologies

K10 - EAL Level 2 Diploma in Engineering Technologies

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 2: Marine (Ship, Yacht, Boat building, maintenance and repair)

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Marine Engineering

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - C&G L2 Certificate in Marine Construction, Systems Engineering and Maintenance

K3 - EAL Level 2 Diploma in Engineering Technology

K4 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice

K5 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K6 - EAL Level 2 Diploma in Engineering Technologies

K7 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice

K8 - City & Guilds Level 2 Diploma in Boatbuilding (Foundation)

K9 - City & Guilds Level 2 Diploma in Marine Engineering (Foundation)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 3: Mechanical Manufacturing Engineering

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Mechanical Manufacturing Engineering

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - EAL Level 2 Diploma in Mechanical Engineering Technology

K3 - EAL Level 2 Diploma in Engineering Technology

K4 - IMI Level 2 Diploma in Motorsport Vehicle Maintenance & Repair

K5 - IMI Level 2 Extended Diploma in Motorsport Vehicle Maintenance & Repair

K6 - City & Guilds Level 2 Certificate in Engineering - Military

K7 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K8 - EAL Level 2 Certificate in Engineering Technologies

K9 - EAL Level 2 Diploma in Engineering Technologies

K10 - EAL Level 2 Certificate in Cycle Maintenance

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 4: Engineering Maintenance and Installation

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Engineering Maintenance and installation

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - EAL Level 2 Diploma in Engineering Technology

K3 - EAL Level 2 Certificate in Engineering Maintenance on Military Vehicles and Equipment

K4 - City & Guilds Level 2 Certificate in Marine Construction, Systems Engineering and Maintenance

K5 - EAL Level 2 Diploma in Maintenance Engineering Technology

K6 - City & Guilds Level 2 Certificate In Aircraft Maintenance (Military Aircraft)

K7 - City & Guilds Level 2 Diploma in Engineering Military Marine and Air Engineering

K8 - City & Guilds Level 2 Certificate in Engineering - Military

K9 - City & Guilds Level 2 Certificate in Cycle Mechanics

K10 - IMI Level 2 Certificate in Cycle Maintenance and Repair

K11 - EAL Level 2 Diploma in Electrical Installation

K12 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K13 - City & Guilds Level 2 Diploma in Electrical Installations (Buildings and Structures)

K14 - EAL Level 2 Certificate in Engineering Technologies

K15 - EAL Level 2 Diploma in Engineering Technologies

K16 - City & Guilds Level 2 Certificate in Light Vehicle Maintenance and Repair Principles

K17 - EAL Level 2 Certificate in Cycle Maintenance

K18 - EAL Level 2 Intermediate Diploma in Electrical Installation

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 5: Fabrication and Welding

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Fabrication and Welding Engineering

Knowledge qualifications available to this pathway:

K1 - EAL Level 2 Diploma in Fabrication and Welding Engineering Technology

K2 - EAL Level 2 Diploma in Engineering Technology

K3 - EAL Level 2 Certificate in Positional Welding

K4 - City & Guilds Level 2 Certificate in Marine Construction, Systems Engineering and Maintenance

K5 - City & Guilds Level 2 Certificate in Engineering - Military

K6 - City & Guilds Level 2 Certificate in Light Vehicle Maintenance and Repair Principles

K7 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice

K8 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K9 - EAL Level 2 Certificate in Engineering Technologies

K10 - EAL Level 2 Diploma in Engineering Technologies

K11 - City & Guilds Level 2 Diploma in Engineering

K12 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 6: Materials Processing and Finishing

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Materials Processing and Finishing

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - EAL Level 2 Diploma in Engineering Technology

K3 - EAL Level 2 Certificate in Metals Industries Processes

K4 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K5 - EAL Level 2 Certificate in Engineering Technologies

K6 - EAL Level 2 Diploma in Engineering Technologies

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities

- Essential skills

Pathway 7: Engineering Technical Support

Competence qualifications available to this pathway:

C1 - Level 2 NVQ Diploma in Engineering Technical Support

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 2 Diploma in Engineering

K2 - EAL Level 2 Diploma in Engineering Technology

K3 - EAL Level 2 Certificate in Engineering Maintenance on Military Vehicles and Equipment

K4 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)

K5 - EAL Level 2 Certificate in Engineering Technologies

K6 - EAL Level 2 Diploma in Engineering Technologies

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Engineering Manufacture

Apprenticeship in Engineering Manufacture (Craft and Technician)

Pathways for this framework at level 3 include:

Pathway 1: Aerospace

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Aeronautical Engineering

C2 - *Level 3 NVQ Diploma in Aeronautical Engineering

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Aircraft Maintenance Engineering Technology

K2 - EAL Level 3 Diploma in Engineering Technology

K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering

K4 - City & Guilds Level 3 Diploma for On-Aircraft Maintenance - Category A

K5 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Civil Aircraft Electrical and Avionics)

K6 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Civil Aircraft Mechanical)

K7 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Mechanical)

K8 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Weapons Maintenance)

K9 - City & Guilds Level 3 Diploma in Aircraft Manufacture (Electrical and Avionics Manufacture)

K10 - City & Guilds Level 3 Diploma in Aircraft Manufacture (Mechanical Manufacture)

K11 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering

K12 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Electrical and Avionics)

K13 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering

K14 - Pearson BTEC Level 3 Extended Diploma in Aircraft Maintenance

K15 - City & Guilds Level 3 Diploma in Aeronautical Engineering (Survival Equipment) Maintenance
K16 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K17 - Pearson BTEC Level 3 Diploma in Engineering
K18 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K19 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K20 - Pearson BTEC Level 3 Extended Diploma in Engineering
K21 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering
K22 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
K23 - IMI Level 3 Diploma in Vehicle Accident Repair Paint Principles
K24 - EAL Level 3 Diploma in Engineering Technologies
K25 - EAL Level 3 Extended Diploma in Engineering Technologies
K26 - Pearson BTEC Level 3 National Diploma in Aeronautical Engineering
K27 - Pearson BTEC Level 3 Extended Certificate in Engineering
K28 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K29 - Pearson BTEC Level 3 Diploma in Engineering
K30 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K31 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K32 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K33 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
K34 - Pearson BTEC Level 3 Extended Diploma in Engineering
K35 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
K36 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering
K37 - **Pearson BTEC Level 4 Higher National Certificate in Engineering
K38 - EAL Level 3 Technical Extended Diploma in Engineering
K39 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 2: Marine (Ship building, maintenance and repair)

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Marine Engineering
C2 - *Level 3 NVQ Diploma in Marine Engineering

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology
K2 - City & Guilds Level 3 Diploma in Engineering
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
K4 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance
K5 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K6 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K7 - Pearson BTEC Level 3 Diploma in Engineering
K8 - EAL Level 3 Certificate in Engineering Technologies

- K9 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
- K10 - EAL Level 3 Diploma in Engineering Technologies
- K11 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering
- K13 - Pearson BTEC Level 3 Diploma in Engineering
- K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
- K15 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K16 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K17 - EAL Level 3 Technical Extended Diploma in Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 3: Mechanical Manufacturing Engineering

Competence qualifications available to this pathway:

- C1 - Level 3 NVQ Extended Diploma in Mechanical Manufacturing Engineering
- C2 - *Level 3 NVQ Diploma in Mechanical Manufacturing Engineering

Knowledge qualifications available to this pathway:

- K1 - EAL Level 3 Diploma in Mechanical Engineering Technology
- K2 - EAL Level 3 Diploma in Engineering Technology
- K3 - EAL Level 3 Diploma in Mechanical Engineering Technology (Progressive)
- K4 - City & Guilds Level 3 Diploma in Engineering
- K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K6 - Pearson BTEC Level 3 Diploma in Engineering
- K7 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K8 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K9 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
- K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering
- K11 - Pearson BTEC Level 3 Extended Diploma in Engineering
- K12 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance
- K13 - EAL Level 3 Diploma in Maintenance Engineering Technology
- K14 - Pearson BTEC Level 3 90-credit Diploma in Engineering
- K15 - EAL Level 3 Diploma in Cycle Maintenance
- K16 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
- K17 - Pearson BTEC Level 3 Certificate in Engineering
- K18 - EAL Level 3 Certificate in Engineering Technologies
- K19 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
- K20 - EAL Level 3 Diploma in Engineering Technologies
- K21 - EAL Level 3 Extended Diploma in Engineering Technologies
- K22 - City & Guilds Level 3 Advanced Technical Extended Diploma in Engineering
- K23 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K24 - Pearson BTEC Level 3 Foundation Diploma in Engineering

K25 - Pearson BTEC Level 3 Diploma in Engineering
K26 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K27 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K28 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
K29 - Pearson BTEC Level 3 Extended Diploma in Engineering
K30 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
K31 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering
K32 - Pearson BTEC Level 4 Higher National Certificate in Engineering
K33 - EAL Level 3 Technical Extended Diploma in Engineering
K34 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering
K35 - University Certificate in Mechatronics
K36 - HNC Mechanical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 4: Marine (Yacht and Boat building, maintenance and repair)

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Diploma in Marine Engineering

Knowledge qualifications available to this pathway:

K1 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance
K2 - Pearson BTEC Level 3 Diploma in Engineering
K3 - City & Guilds Level 3 Diploma in Engineering - Marine
K4 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
K5 - EAL Level 3 Diploma in Engineering Technologies
K6 - Pearson BTEC Level 3 Extended Certificate in Engineering
K7 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K8 - Pearson BTEC Level 3 Diploma in Engineering
K9 - Pearson BTEC Level 4 Higher National Certificate in Engineering
K10 - EAL Level 3 Technical Extended Diploma in Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 5: Engineering Maintenance

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Engineering Maintenance
C2 - *Level 3 NVQ Diploma in Engineering Maintenance
C3 - Level 3 NVQ Extended Diploma in Engineering Maintenance (Servicing Medical Equipment)

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Maintenance Engineering Technology

- K2 - EAL Level 3 Diploma in Cycle Maintenance
- K3 - EAL Level 3 Diploma in Engineering Technology
- K4 - EAL Level 3 Diploma in Maintenance Engineering Technology (Progressive)
- K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K6 - EAL Level 3 Diploma in Equipment Maintenance Engineering
- K7 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance
- K8 - City & Guilds Level 3 Diploma in Engineering
- K9 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering
- K10 - Pearson BTEC Level 3 Extended Diploma in Engineering
- K11 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K12 - City & Guilds Level 3 Diploma in Engineering - Weapons Engineering Maintenance
- K13 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
- K15 - Pearson BTEC Level 3 Diploma in Engineering
- K16 - City & Guilds Level 3 Diploma in Engineering - Marine
- K17 - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment
- K18 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
- K19 - Pearson BTEC Level 3 Extended Diploma in Operations and Maintenance
- K20 - Pearson BTEC Level 3 90-credit Diploma in Engineering
- K21 - City & Guilds Level 3 Diploma for On-Aircraft Maintenance - Category A
- K22 - City & Guilds Level 3 Diploma in Engineering - Military Vehicles
- K23 - City & Guilds Level 3 Diploma in Engineering - Armourers
- K24 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
- K25 - EAL Level 3 Certificate in Engineering Technologies
- K26 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
- K27 - EAL Level 3 Diploma in Engineering Technologies
- K28 - EAL Level 3 Extended Diploma in Engineering Technologies
- K29 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K30 - Pearson BTEC Level 3 Foundation Diploma in Engineering
- K31 - Pearson BTEC Level 3 Diploma in Engineering
- K32 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
- K33 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K34 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K35 - Pearson BTEC Level 3 Extended Diploma in Engineering
- K36 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
- K37 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
- K38 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering
- K39 - Open College Network West Midlands Level 3 Certificate in Principles of Servicing Medical Equipment
- K40 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K41 - EAL Level 3 Technical Extended Diploma in Engineering
- K42 - AQA Level 3 Technical Level Engineering: Mechatronic Engineering
- K43 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering
- K44 - HNC Mechanical Engineering
- K45 - HNC Electrical / Electronic Engineering

K46 - HND Electrical and Electronic Engineering

K47 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technologies

K48 - HNC Mechanical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 6: Fabrication and Welding

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Fabrication and Welding

C2 - *Level 3 NVQ Diploma in Fabrication and Welding

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology

K2 - EAL Level 3 Diploma in Fabrication and Welding Engineering Technology

K3 - EAL Level 3 Diploma in Fabrication and Welding Engineering Technology (Progressive)

K4 - City & Guilds Level 3 Diploma in Engineering

K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering

K6 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance

K7 - Pearson BTEC Level 3 Diploma in Engineering

K8 - Pearson BTEC Level 3 Diploma in Mechanical Engineering

K9 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering

K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering

K11 - Pearson BTEC Level 3 90-credit Diploma in Engineering

K12 - Skills and Education Group Awards Level 3 Diploma in Fabrication and Welding Practice

K13 - Skills and Education Group Awards Level 3 Certificate in Fabrication and Welding Practice

K14 - EAL Level 3 Certificate in Engineering Technologies

K15 - EAL Level 3 Subsidiary Diploma in Engineering Technologies

K16 - EAL Level 3 Diploma in Engineering Technologies

K17 - EAL Level 3 Extended Diploma in Engineering Technologies

K18 - Pearson BTEC Level 3 Extended Certificate in Engineering

K19 - Pearson BTEC Level 3 Foundation Diploma in Engineering

K20 - Pearson BTEC Level 3 Diploma in Engineering

K21 - Pearson BTEC Level 3 Diploma in Mechanical Engineering

K22 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering

K23 - Pearson BTEC Level 4 Higher National Certificate in Engineering

K24 - EAL Level 3 Technical Extended Diploma in Engineering

K25 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering

K26 - Skills and Education Group Awards Level 3 Certificate in Fabrication and Welding Practice

K27 - Skills and Education Group Awards Level 3 Diploma in Fabrication and Welding Practice

K28 - City and Guilds Level 3 Diploma in Engineering Construction 2660

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 7: Materials Processing and Finishing

Competence qualifications available to this pathway:

- C1 - Level 3 NVQ Extended Diploma in Materials Processing and Finishing
- C2 - *Level 3 NVQ Diploma in Materials Processing and Finishing

Knowledge qualifications available to this pathway:

- K1 - EAL Level 3 Diploma in Casting Technology
- K2 - EAL Level 3 Diploma in Engineering Technology
- K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K4 - Pearson BTEC Level 3 Diploma in Engineering
- K5 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
- K6 - City & Guilds Level 3 Diploma in Engineering
- K7 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K8 - EAL Level 3 Diploma in Engineering Technologies
- K9 - EAL Level 3 Extended Diploma in Engineering Technologies
- K10 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K11 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering
- K13 - Pearson BTEC Level 3 Diploma in Engineering
- K14 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K15 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K16 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
- K17 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K18 - EAL Level 3 Technical Extended Diploma in Engineering
- K19 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 8: Engineering Technical Support

Competence qualifications available to this pathway:

- C1 - Level 3 NVQ Extended Diploma in Engineering Technical Support
- C2 - *Level 3 NVQ Diploma in Engineering Technical Support

Knowledge qualifications available to this pathway:

- K1 - EAL Level 3 Diploma in Engineering Technology
- K2 - City & Guilds Level 3 Diploma in Engineering
- K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K4 - Pearson BTEC Level 3 Diploma in Engineering
- K5 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K6 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering

K7 - Pearson BTEC Level 3 Diploma in Construction and the Built Environment
K8 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K9 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K10 - EAL Level 3 Diploma in Mechanical Engineering Technology
K11 - EAL Level 3 Diploma in Maintenance Engineering Technology
K12 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering
K13 - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment
K14 - Pearson BTEC Level 3 Extended Diploma in Engineering
K15 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
K16 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Mechanical)
K17 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Electrical and Avionics)
K18 - Pearson BTEC Level 3 Diploma in Business
K19 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
K20 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering
K21 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology
K22 - EAL Level 3 Certificate in Engineering Technologies
K23 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
K24 - EAL Level 3 Diploma in Engineering Technologies
K25 - EAL Level 3 Extended Diploma in Engineering Technologies
K26 - Pearson BTEC Level 3 Extended Certificate in Engineering
K27 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K28 - Pearson BTEC Level 3 Diploma in Engineering
K29 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K30 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K31 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K32 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
K33 - Pearson BTEC Level 3 Extended Diploma in Engineering
K34 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
K35 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
K36 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering
K37 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering
K38 - Pearson BTEC Level 4 Higher National Certificate in Engineering
K39 - EAL Level 3 Technical Extended Diploma in Engineering
K40 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering
K41 - HNC Mechanical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 9: Electrical and Electronic Engineering

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Electrical and Electronic Engineering

C2 - *Level 3 NVQ Diploma in Electrical and Electronic Engineering

Knowledge qualifications available to this pathway:

- K1 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology
- K2 - EAL Level 3 Diploma in Engineering Technology
- K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K4 - Pearson BTEC Level 3 Diploma in Engineering
- K5 - Pearson BTEC Level 3 Diploma in Electrical Electronic Engineering
- K6 - City & Guilds Level 3 Diploma in Engineering
- K7 - Pearson BTEC Level 3 Diploma in ICT Systems and Principles
- K8 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
- K9 - Pearson BTEC Level 3 Extended Diploma in Engineering
- K10 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K11 - EAL Level 3 Certificate in Engineering Technologies
- K12 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
- K13 - EAL Level 3 Diploma in Engineering Technologies
- K14 - EAL Level 3 Extended Diploma in Engineering Technologies
- K15 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K16 - Pearson BTEC Level 3 Foundation Diploma in Engineering
- K17 - Pearson BTEC Level 3 Diploma in Engineering
- K18 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
- K19 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K20 - Pearson BTEC Level 3 Extended Diploma in Engineering
- K21 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
- K22 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K23 - EAL Level 3 Technical Extended Diploma in Engineering
- K24 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering
- K25 - EAL Level 3 Certificate in Robotics and Automation
- K26 - HND Electrical and Electronic Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 10: Installation and Commissioning

Competence qualifications available to this pathway:

- C1 - Level 3 NVQ Extended Diploma in Installation and Commissioning
- C2 - *Level 3 NVQ Diploma in Installation and Commissioning

Knowledge qualifications available to this pathway:

- K1 - EAL Level 3 Diploma in Engineering Technology
- K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
- K3 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance
- K4 - Pearson BTEC Level 3 Diploma in Engineering
- K5 - City & Guilds Level 3 Diploma in Engineering
- K6 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering

K7 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology
K8 - Pearson Level 3 Diploma in Electrical/ Electronic Engineering
K9 - City & Guilds Level 3 Diploma in Engineering - Military Vehicles
K10 - City & Guilds Level 3 Diploma in Engineering - Armourers
K11 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K12 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering
K13 - Pearson BTEC Level 3 Extended Diploma in Engineering
K14 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K15 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
K16 - EAL Level 3 Diploma in Engineering Technologies
K17 - Pearson BTEC Level 3 Extended Certificate in Engineering
K18 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K19 - Pearson BTEC Level 3 Diploma in Engineering
K20 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K21 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K22 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K23 - Pearson BTEC Level 3 Extended Diploma in Engineering
K24 - Pearson BTEC Level 4 Higher National Certificate in Engineering
K25 - EAL Level 3 Technical Extended Diploma in Engineering
K26 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 11: Engineering Toolmaking

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Engineering Toolmaking
C2 - *Level 3 NVQ Diploma in Engineering Toolmaking

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology
K2 - EAL Level 3 Diploma in Mechanical Engineering Technology (Progressive)
K3 - EAL Level 3 Diploma in Mechanical Engineering Technology
K4 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
K5 - City & Guilds Level 3 Diploma in Engineering
K6 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K7 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K8 - Pearson BTEC Level 3 Diploma in Engineering
K9 - Pearson BTEC Level 3 Extended Diploma in Engineering
K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering
K11 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
K12 - EAL Level 3 Diploma in Engineering Technologies
K13 - EAL Level 3 Extended Diploma in Engineering Technologies

K14 - Pearson BTEC Level 3 Extended Certificate in Engineering
K15 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K16 - Pearson BTEC Level 3 Diploma in Engineering
K17 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
K18 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K19 - Pearson BTEC Level 3 Extended Diploma in Engineering
K20 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering
K21 - Pearson BTEC Level 4 Higher National Certificate in Engineering
K22 - EAL Level 3 Technical Extended Diploma in Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 12: Automotive

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Automotive Engineering
C2 - *Level 3 NVQ Diploma in Automotive Engineering

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology
K2 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering
K4 - Pearson BTEC Level 3 Diploma in Engineering
K5 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering
K6 - IMI Level 3 Diploma in Motorsport Vehicle Maintenance and Repair
K7 - IMI Level 3 Extended Diploma in Motorsport Vehicle Maintenance and Repair
K8 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K9 - Pearson BTEC Level 3 Subsidiary Diploma in Vehicle Technology (Motorsport)
K10 - Pearson BTEC Level 3 Diploma in Vehicle Technology (Motorsport)
K11 - Pearson BTEC Level 3 Extended Diploma in Vehicle Technology (Motorsport)
K12 - IMI Level 3 Diploma in Heavy Vehicle Maintenance and Repair Principles
K13 - Pearson BTEC Level 3 90-credit Diploma in Engineering
K14 - Pearson BTEC Level 3 Extended Diploma in Engineering
K15 - EAL Level 3 Certificate in Engineering Technologies
K16 - EAL Level 3 Subsidiary Diploma in Engineering Technologies
K17 - EAL Level 3 Diploma in Engineering Technologies
K18 - EAL Level 3 Extended Diploma in Engineering Technologies
K19 - Pearson BTEC Level 3 Extended Certificate in Engineering
K20 - Pearson BTEC Level 3 Foundation Diploma in Engineering
K21 - Pearson BTEC Level 3 Diploma in Engineering
K22 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
K23 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
K24 - Pearson BTEC Level 3 Extended Diploma in Engineering

K25 - Pearson BTEC Level 4 Higher National Certificate in Engineering

K26 - EAL Level 3 Technical Extended Diploma in Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 13: Engineering Woodworking, Pattern and Modelmaking

Competence qualifications available to this pathway:

C1 - Level 3 Extended Diploma in Engineering Woodworking, Pattern and Model Making

C2 - *Level 3 NVQ Diploma in Engineering Woodworking, Pattern and Model Making

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology

K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering

K3 - Pearson BTEC Level 3 Diploma in Engineering

K4 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering

K5 - EAL Level 3 Diploma in Casting Technology

K6 - EAL Level 3 Diploma in Engineering Technologies

K7 - EAL Level 3 Extended Diploma in Engineering Technologies

K8 - Pearson BTEC Level 3 Extended Certificate in Engineering

K9 - Pearson BTEC Level 3 Foundation Diploma in Engineering

K10 - Pearson BTEC Level 3 Diploma in Engineering

K11 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering

K12 - Pearson BTEC Level 4 Higher National Certificate in Engineering

K13 - EAL Level 3 Technical Extended Diploma in Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 14: Engineering Leadership

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Extended Diploma in Engineering Leadership

C2 - *Level 3 NVQ Diploma in Engineering Leadership

Knowledge qualifications available to this pathway:

K1 - EAL Level 3 Diploma in Engineering Technology

K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering

K3 - Pearson BTEC Level 3 Diploma in Engineering

K4 - Pearson BTEC Level 3 Diploma in Mechanical Engineering

K5 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering

K6 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering

K7 - Pearson BTEC Level 3 Diploma in Construction and the Built Environment

K8 - Pearson BTEC Level 3 Diploma in Electrical / Electronic Engineering

- K9 - EAL Level 3 Diploma in Engineering Technologies
- K10 - EAL Level 3 Extended Diploma in Engineering Technologies
- K11 - Pearson BTEC Level 3 Extended Certificate in Engineering
- K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering
- K13 - Pearson BTEC Level 3 Diploma in Engineering
- K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering
- K15 - Pearson BTEC Level 3 Diploma in Mechanical Engineering
- K16 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering
- K17 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering
- K18 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K19 - EAL Level 3 Technical Extended Diploma in Engineering
- K20 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Framework information

Information on the Publishing Authority for this framework:

SEMTA

The Apprenticeship sector for occupations in science, engineering and manufacturing technologies.

Issue number: 17	This framework includes:
Framework ID: FR04369	Level 2 Level 3
Date this framework is to be reviewed by: 31/12/2019	This framework is for use in: Wales

Short description

This Foundation Apprenticeship and Apprenticeship in Engineering Manufacture is designed to provide the skills, knowledge and competence requirements to work at semi-skilled or qualified operator level (Level 2) or craft or technician level (Level 3) as appropriate, carrying out a variety of engineering and manufacturing processes within the following range of sub-sectors: Automotive, Aerospace, Electronics, Mechanical, Marine, Electrical, Metal goods and Other Transport Equipment.

Contact information

Proposer of this framework

Semta has worked closely with its employers to define National Occupational Standards (NOS). From the NOS, qualifications such as NVQs and Technical Certificates have been developed that are suitable for use within this apprenticeship framework.

This Engineering Manufacture (Wales) framework has been operating since 1998 in blueprint form before being configured into the SASW. As such the original development steering group was the Semta National Training Framework Committee. Since then the framework has been reviewed by the large employer group together with their supply chains, including Tata Steel, Airbus, British Airways Maintenance Centre, GEAS, Calsonic FFG Ltd and Scheaffler, who have been involved in the review of both the framework and the National Occupational Standards. The framework has also been shared with the National Forum of Engineering Centres (NFEC) and the Engineering GTA network, who represent small and medium size employers.

This Engineering Manufacture framework will ensure that apprentices are given the appropriate skills, knowledge and understanding required in the workplace.

Developer of this framework

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Revising a framework

Contact details

Who is making this revision: Standards & Frameworks
Your organisation: Sema
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Why this framework is being revised

The framework is being revised to:

- add new knowledge qualifications as requested by Awarding Organisations
- remove competence qualification no longer available as requested by Awarding Organisation
- update Awarding Organisation details for ABC awards to Skills and Education Group Awards

Summary of changes made to this framework

ENGINEERING MANUFACTURE - Level 3

Pathway 3: Mechanical Manufacturing Engineering

One knowledge qualification has been added

One competence qualification has been removed

Pathway 5: Engineering Maintenance

One new knowledge qualification has been added

Pathway 8: Engineering Technical Support

One new knowledge qualification has been added

Qualifications removed

ENGINEERING MANUFACTURE - Level 2

Pathway 3: Mechanical Manufacturing Engineering

City and Guilds Level 2 NVQ Diploma in Mechanical Manufacturing Engineering

Qualifications added

ENGINEERING MANUFACTURE - Level 3

Pathway 3: Mechanical Manufacturing Engineering

- K36 - HNC Mechanical Engineering (University of South Wales)

Pathway 5: Engineering Maintenance

- K48 - HNC Mechanical Engineering (University of South Wales)

Pathway 8: Engineering Technical Support

- K41 - HNC Mechanical Engineering (University of South Wales)

Qualifications that have been extended

None

Purpose of this framework

Summary of the purpose of the framework

Foundation Apprenticeships and Apprenticeships are jobs with an accompanying skills development programme designed by employers in the sector. They allow the apprentice to gain technical knowledge and real practical experience, along with essential and personal skills, required for their immediate job and future career. These are acquired through a mix of learning in the workplace, formal off the job training and the opportunity to practice and embed new skills in a real work context. This broader mix differentiates the Apprenticeship experience from training delivered to meet narrowly focused job needs.

All apprentices commencing their Foundation Apprenticeship or Apprenticeship must have an Apprenticeship Agreement between the employer and apprentice. This can be used to reinforce the understanding of the requirements of the apprenticeship. On completion of the Apprenticeship the apprentice must be able to undertake the full range of duties, in the range of circumstances appropriate to the job, confidently and competently to the standard set by the industry.

Semta's engineering sector profile in Wales is composed of eight core engineering manufacturing sectors.

The "leading-edge" sectors include:

- Aerospace
- Automotive
- Electronics
- Marine (ship, boat and yacht building, maintenance and repair)

The "mature engineering" sectors include:

- Electrical
- Metal goods
- Mechanical
- Other Transport Equipment

Sector employment and establishments

The combined Advanced Manufacturing and Engineering (AME) sub-sectors in Wales employ 96,900 people across 5,805 establishments. Of those working in AME, an estimated 66,000 people are employed in technical roles such as professional engineers, scientists and technologists.

Key AME sub-sectors in Wales include metals (27% of AME employment), consultancy, testing

and analysis (16%), electronics (15%), aerospace (14%) and automotive (10%).

AME employment in Wales is concentrated in Flintshire (15%), Cardiff (9%), Neath Port Talbot (8%) and Bridgend (6%).

Micro-sized establishments (less than 10 employees) account for 82% of total AME establishments, Small and Medium-sized Enterprises (SMEs (10 to 249 employees)) represent 17% of establishments and less than 1% of AME establishments in Wales are large (250 employees plus) – just 495 of approx. 120,480.

Demographics of the technical workforce in the AME sectors in Wales

Working status - 95% of the AME technical workforce is a company employee and 95% of the technical workforce is employed on a full-time basis.

Gender - only 9% of the technical workforce is female.

Age – only 6% of the technical workforce is aged 16-24 years old, with 9% aged 60 years and over.

Disability - only 8% of the technical workforce has some sort of disability.

Ethnicity - only 5% of the technical workforce is from an ethnic minority.

Occupations

In terms of technical occupations, approximately 12,500 people are employed as technicians, 19,670 people are employed in craft level occupations and 17,345 in operator level occupations. These three technical occupations account for 75% of total employment in technical occupations within the AME sectors in Wales.

Employment trends

The AME sectors in Wales have experienced a period of major restructuring. Between 2010 to 2014, there was a net gain of nearly 17,000 jobs (+21%), compared with an increase in employment of 3% across all sectors in Wales. In 2015, there were 433 postings for technical engineering jobs in Wales.

Employment projections

Taking into account retirements, for operator, craft and technician technical roles, there is expected to be a net requirement across the AME sectors in Wales for 4,000 new recruits (800 per annum) in these occupations between 2016-2020.

Vacancies

Employers in the AME sectors in Wales show a substantial demand for new recruits. In 2015, it is estimated that 18% of AME establishments in Wales had vacancies compared to 14% of establishments across all sectors. In total, there were 1,400 vacancies across the AME sectors

in Wales. In terms of specific occupations, it is estimated that there were vacancies for 210 operators, 550 craftspersons and 130 technicians..

Over three-quarters of all AME vacancies in Wales were from SMEs (50-249 employees).

It is estimated that 10% of AME employers in Wales had hard-to-fill vacancies with a total of 660 hard-to-fill vacancies reported. Two-thirds of all hard-to-fill vacancies were in craft, technician and operator occupations. Skill shortages in applicants were the main reason for these hard-to-fill vacancies. . Employers in Wales have increased their provision of off-the-job training from 47% in 2013 to 49% in 2015, reflecting an increased awareness of the need to tackle the problem themselves.

Drivers of skills change

The engineering sectors felt that the main drivers of future skills requirements would be new legislative or regulatory requirements, introduction of new technologies or equipment, development of new products and services, introduction of new working practices and increased competitive pressure. Large and medium-sized employers were most likely to expect a change in their skills needs from the key drivers identified.

Craftspersons, operators and technicians were among the occupations most likely to be affected by the need to acquire new skills or knowledge.

Skill needs and gaps

26% of AME establishments in Wales reported skills gaps. The incidence of skills gaps increases by size of establishment, ranging from 20% of micro-sized establishments to 46% of large establishments.

It is estimated that 7% of the AME workforce in Wales have skills gaps. The main reason for skills gaps in the AME sectors is a lack of experience/being recently recruited.

The main skills cited as lacking in employees were technical, practical or job specific skills (approximately three quarters of establishments reporting skills gaps). Employers were most likely to have technical skills gaps with craft, operator and technician occupations.

The other main skills gaps highlighted include problem solving, team working, oral communications and management skills.

The main impact of skills gaps were increased workload for other staff, increased operating costs, difficulties meeting quality standards and difficulties introducing new working practices. The main action taken to overcome skills gaps by AME employers was to increase training activity/spend or increase/expand trainee programmes.

Operator/semi-skilled technical occupations Employment

- 17,100 (approx) operators are employed in technical roles in the AME sectors in Wales.

Key occupations

Key operator level occupations include: assemblers (electrical and electronic products), assemblers (vehicles and metal goods); routine inspectors and testers and metal making and treating process operatives.

Demographic profile for operators

Female: 16%

Age 16-24: 8%

Age 60+: 14%

Have any disability: 9%

Ethnicity (non-white): 6%

Proportion of total employment: 16%

Vacancies

- It is estimated that in there were 210 operator vacancies across the AME sectors in Wales in 2015.

Skills gaps

- 4% of AME establishments in Wales had skills gaps for operators.
- 15% of operators had skills gaps.

Future skills demand

- 1,600 operators (320 per annum) are required into the AME sectors in Wales over the period 2016-2020.

The Foundation Apprenticeship in Engineering Manufacture framework has been developed to address critical skills gaps and shortages as detailed above and contains seven pathways:

Pathway 1 Aerospace

Pathway 2 Marine (Ship, Yacht, Boat building, maintenance and repair)

Pathway 3 Mechanical Manufacturing Engineering

Pathway 4 Engineering Maintenance and Installation

Pathway 5 Fabrication and Welding

Pathway 6 Materials Processing and Finishing

Pathway 7 Engineering Technical Support

These are key to addressing the skills needs and gaps highlighted. The framework in its old NQF format has a proven track record, with a consistent 8,000 apprentice starts per year. The new QCF format will allow greater tailoring of qualifications to meet employers skills needs, so higher take-up levels are anticipated.

Craft/technician technical occupations

Employment

- 20,830 craftsperson and 11,340 technicians are employed in technical roles in the AME sectors in Wales.

Key occupations

- Key technician level occupations include: engineering technicians, electrical and electronics technicians; planning, process and production technicians and draughtspersons.
- Key craft level occupations include: metal working production and maintenance fitters; aircraft maintenance and related trades; welding trades and metal machining setters and setter-operators.

Demographic profile for engineering craftspersons

Female: 10%

Age 16-24: 11%

Age 60+: 12%

Have any disability: 11%

Ethnicity (non-white): 4%

Proportion of total employment: 21%

Demographic profile for engineering technicians

Female: <1%

Age 16-24: 9%

Age 60+: 12%

Have any disability: 11%

Ethnicity (non-white): <1%

Proportion of total employment: 4%

Vacancies

- It is estimated that there were 550 craftsperson vacancies and 150 technician vacancies across the AME sectors in Wales in 2015.

Skills gaps

- 7% of AME establishments had skills gaps for craftspersons and 3% had skills gaps for technicians.
- 5% of craftspersons and 3% of technicians had skills gaps.

The Apprenticeship in Engineering Manufacture framework has been developed to address critical skills gaps and shortages as detailed above and contains fourteen pathways:

Pathway 1: Aerospace

Pathway 2: Marine (Ship building, maintenance and repair)

Pathway 3: Mechanical Manufacturing Engineering

Pathway 4: Marine (Yacht and boat building, maintenance and repair)

Pathway 5: Engineering Maintenance

Pathway 6: Fabrication and Welding

Pathway 7: Materials Processing and Finishing

Pathway 8: Engineering Technical Support

Pathway 9: Electrical and Electronic Engineering

Pathway 10: Installing and Commissioning

Pathway 11: Engineering Toolmaking

Pathway 12: Automotive

Pathway 13: Engineering Woodworking, Pattern making and Model Making

Pathway 14: Engineering Leadership

These pathways are key to addressing the skills gaps and needs identified

Future skills demand

- 2,000 craftspersons (400 per annum) and 400 technicians (80 per annum) are required into the AME sectors in Wales over the period 2016-2020.

The Engineering Manufacture framework at Level 2 and Level 3 covers a broad range of engineering sub-sectors such as: Automotive, Aerospace, Electronics, Mechanical, Marine, Electrical, Metal goods and Other Transport Equipment. It is designed to provide the skills, knowledge and competence requirements through specific sub-sector pathways to operate at operator, semi-skilled, craft or technician level within these areas.

The engineering sector has a long tradition of offering apprenticeship frameworks as a means of meeting the skills requirements for its sector. The framework has kept pace with technological change within each of the sub-sectors and remains highly relevant to their skills training needs. Alongside the technology pathways are the traditional craft skills generally associated with the 'mature' sub-sectors such as welding and fabrication and engineering maintenance.

The framework has been designed to address the skills gaps and shortages identified, and address an ageing workforce, by attracting young people into the engineering industry and providing them with the skills, knowledge and experience which employers are seeking. In addition the Apprenticeship provides a progression route that the existing workforce can use to up-skill themselves to meet the technical, economic and environmental changes.

There are a very significant range of job titles, roles and occupations within the scope of this framework at both Level 2 and Level 3, but generally operator, semi-skilled and craft roles are more common within the more mature sub-sectors and technician roles in the leading edge sub-sectors.

Aims and objectives of this framework (Wales)

The aim of this framework is to provide apprentices with the skills, underpinning knowledge and transferable skills required to operate in each of the engineering sub-sectors, carrying out a wide variety of defined semi-skilled, craft and technician roles through the pathways described, while also aiming to meet current and future skills needs by supporting retention, motivation and performance.

Further objectives are to:

- provide a structured training programme to develop and upskill the workforce
- develop more craft and technicians through apprenticeships
- attract new people into the Welsh engineering/manufacturing sector from a diverse range of backgrounds to replace those who naturally leave the sector and those 9% who are 60+ who will retire sometime in the next 5 years
- provide apprentices with the relevant semi-skilled, craft or technician skills required by Welsh engineering manufacturing employers.
- ensure apprentices can undertake engineering and manufacturing operations safely and effectively
- provide a range of pathways that meet engineering and manufacturing employers' needs
- improve overall operational performance through improving skills
- help improve recruitment and retention rates within the industry by offering appropriate career progression
- improve productivity rates and thus profitability (GVA per employee)
- tackle the diversity issue within the sector, especially under representation of women (only 20% of the workforce is female, compared to 50% for all sectors in Wales).
- increase the overall level of participation in apprenticeship training from its current 9% and contribute to the target of 100,000 apprenticeship starts over 5 years in Wales
- increase the level of general literacy and numeracy through Essential Skills Wales
- develop apprentices' employability and skills making them more attractive to all employers whichever career they choose.

Entry conditions for this framework

The Level 2 framework offers seven pathways. Employers wish to attract applicants who have an interest in working in an engineering manufacture environment and welcome applicants from a diverse range of backgrounds and anticipate that they will have a wide range of experience, achievements and qualifications.

As a guide, the Foundation Apprenticeship in Engineering Manufacture framework (Level 2) is suitable for applicants who have five GCSEs grades D to E (new equivalent grades 3 to 2) in English, Maths and Science. The selection process on behalf of employers may include initial assessment where applicants will be asked if they have any qualifications or experience that can be accredited against the requirements of the apprenticeship. They may also be required to take tests in basic numeracy and literacy, communication skills and spatial awareness. There may also be an interview to ensure applicants have selected the right occupational sector and are motivated to become an apprentice, as undertaking an apprenticeship is a major commitment for both the individual and the employer.

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

Employers would be interested in applicants who:

- have previous work experience or employment in the sector or
- are keen and motivated to work in an engineering/manufacturing environment or
- are willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace or
- have a Welsh Baccalaureate or
- have GCSEs in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) in a relevant discipline or
- are practically minded and want to work with their hands 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 2 or
- have completed the Essential Skills Qualifications (ESQ) or
- have completed tests in basic numeracy, literacy and communication skills and have spatial awareness.

Initial Assessment

Training providers/colleges and employers will use initial assessment to ensure that applicants

have a fair opportunity to demonstrate their ability and to tailor programmes to meet individual needs, recognising prior qualifications and experience.

Rules to avoid the need to repeat qualifications

Processes exist to make sure that applicants with prior knowledge, qualifications and/or experience are not disadvantaged by having to repeat learning. Training providers, Colleges and Awarding Organisations will be able to advise applicants on the current rules for accrediting prior learning (APL) and recognising experience. There are no relaxations or proxies for any qualifications specified in a framework in SASW, however, providers are encouraged to identify additional on-the-job training programmes that customise the learning to the new workplace.

It is understood that where applicants have accredited prior learning that apprentices must be offered training which helps them to develop new skills and learning at a higher level.

Essential Skills Wales (ESW)

Apprentices registered on a SASW Apprenticeship on or after 1st January 2016 must complete the required mandatory new Essential Skills Qualifications (ESQ) at Level 2: Essential Communication Skills and Essential Application of Number Skills and Essential Digital Literacy Skills.

Apprentices who have enrolled prior to 31st December 2015 can continue to work towards either Key Skills / Essential Skills Wales (AON, Comms, and ICT / Digital Literacy) as required by the framework, which will be accepted within SASW.

For apprentices registered on or after 14th October 2016, recognised proxies for the new ESQ qualifications are accepted - these are listed in the front of this framework document. This includes the Welsh Baccalaureate Qualification (WBQ) with ESQ and GCSE components. Candidates undertaking the new WBQ will not be required to provide individual certificates as evidence.

Apprenticeship starts before the 14th October 2016 must continue to meet the 2013 SASW requirements for Essential Skills. Essential Skills Wales qualifications achieved in the context of the Welsh Baccalaureate Qualification (WBQ) can be accepted as long as the specific certification of the title(s) and level(s) of those ESW/ESQ qualifications is provided. The WBQ certificate itself does not provide this specific evidence.

Competence qualifications

If applicants already have one of the competence qualifications at Level 2 (see competence qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of starting their apprenticeship.

It is important however that there is agreement between the employer and the apprentice that the applicant is currently competent.

The hours that were spent gaining the qualification may be counted towards the total hours for the apprenticeship.

Knowledge qualifications

If applicants already have one of the knowledge qualifications or individual units at Level 2 (see knowledge qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of starting their apprenticeship. For example, they may have already achieved the knowledge element as part of the Welsh Baccalaureate. Furthermore the hours that were spent gaining the qualification may be counted towards the total hours for the apprenticeship.

The Welsh Baccalaureate with its Core programme of personal learning and development studies along with options such as NVQs, Vocational Qualifications and Principal Learning (Engineering World, Discovering Engineering Technology and Engineering the Future) could provide significant opportunities for accreditation of Prior Learning against the components of this framework. The same processes can be applied to GCSEs. Training providers/colleges should be able to advise entrants on the potential reduction in programme duration that could result from accrediting previous qualifications and experience.

Wider Key Skills

Wider Key Skills qualifications are no longer required for this framework.

Note: Apprentices already registered on an earlier framework can have Wider Key Skills qualifications previously attained in the context of the Welsh Baccalaureate Qualification (WBQ) accepted, provided the specific proof of certification of the title(s) and level(s) of those qualifications is provided. The WBQ certificate does not provide this specific evidence.

Prior experience in the sector

Applicants that are already working in the sector or have recently worked in the sector at the appropriate level can apply to have their experience formally recognised by an Awarding Organisation and this could count towards the qualification(s) in this framework.

The **Level 3 framework** offers a broad range of activities across fourteen pathways. Employers would welcome applicants from a wide and diverse background and wish to attract applicants who have an interest to work in a manufacturing or engineering environment.

As a guide, the Apprenticeship in Engineering Manufacture framework is suitable for applicants who have five GCSEs grade C (new equivalent grade 4) or above including Maths, English, and a Science. This is not a hard and fast rule but may vary according to the pathway chosen (operator, semi-skilled, craft or technician) and the suitability of individual candidates.

Applicants 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.

Employers would be interested in applicants who:

- have completed a Foundation Apprenticeship at Level 2 in the relevant engineering/manufacturing occupational discipline or
- have GCSEs in English, Maths and a Science - grade C (new equivalent grade 4) or above or
- have a Welsh Baccalaureate 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
- are willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace or
- have relevant previous work experience or employment in the sector or
- have completed the Essential Skills Qualifications (ESQ) or
- have the ability to follow instructions and diagrams
- have literacy and numeracy to work with data
- are good team worker, who can also work under own initiative
- are keen and motivated to work in an engineering or manufacturing environment

Selection process

The selection process on behalf of employers may include initial assessment activity such as tests in basic numeracy, literacy, communication skills and spatial awareness. There may also be an interview to ensure potential apprentices have selected the right occupational sector to meet their needs and expectations and those of their employer, as undertaking an apprenticeship is a major commitment for both the individual and the employer.

Rules to avoid the need to repeat qualifications

To avoid the need to repeat qualifications, processes exist to ensure applicants with prior knowledge, qualifications and/or experience are not disadvantaged. Colleges, Training Providers and Awarding Organisations will be able to advise applicants on the current rules for accrediting prior learning and experience. There are no relaxations or proxies for any qualifications specified in a framework in SASW, however, providers are encouraged to identify additional on-the-job training programmes that customise the learning to the new workplace.

Essential Skills Wales (ESW)

Apprentices registered on a SASW Apprenticeship on or after 1st January 2016 must complete the required mandatory new Essential Skills Qualifications (ESQ) at Level 2: Essential

Communication Skills and Essential Application of Number Skills and Essential Digital Literacy Skills.

Apprentices who have enrolled prior to 31st December 2015 can continue to work towards either Key Skills / Essential Skills Wales (AON, Comms, and ICT / Digital Literacy) as required by the framework, which will be accepted within SASW.

For apprentices registered on or after 14th October 2016, recognised proxies for the new ESQ qualifications are accepted - these are listed in the front of this framework document. This includes the Welsh Baccalaureate Qualification (WBQ) with ESQ and GCSE components. Candidates undertaking the new WBQ will not be required to provide individual certificates as evidence.

Apprenticeship starts before the 14th October 2016 must continue to meet the 2013 SASW requirements for Essential Skills. Essential Skills Wales qualifications achieved in the context of the Welsh Baccalaureate Qualification (WBQ) can be accepted as long as the specific certification of the title(s) and level(s) of those ESW/ESQ qualifications is provided. The WBQ certificate itself does not provide this specific evidence.

Knowledge qualifications

If applicants already have one of the knowledge qualifications or individual units at Level 3 (see knowledge qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of starting their apprenticeship. For example, they may have already achieved the knowledge element as part of the Welsh Baccalaureate. Furthermore the hours that were spent gaining the qualification may be counted towards the total hours for the apprenticeship.

Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

The Welsh Baccalaureate with its Core programme of personal learning and development studies along with options such as NVQs, Vocational Qualifications and Principal Learning (Engineering World, Discovering Engineering Technology and Engineering the Future) could provide significant opportunities for accreditation of Prior Learning against the components of this framework. The same processes can be applied to GCSEs. Training providers/colleges should be able to advise entrants on the potential reduction in programme duration that could result from accrediting previous qualifications and experience.

Competence qualifications

If applicants already have one of the competence qualifications at Level 3 (see competence qualifications page) before starting their apprenticeship, they may count this and will not have to repeat the qualification providing they have achieved this qualification within five years of

starting their apprenticeship.

It is important however that there is agreement between the employer and the apprentice that the applicant is currently competent.

As is the case with the knowledge element above the hours that were spent gaining the competence qualification may be counted towards the total hours for the apprenticeship.

Wider Key Skills

Wider Key Skills qualifications are no longer required for this framework.

Note: Apprentices already registered on an earlier framework can have Wider Key Skills qualifications previously attained in the context of the Welsh Baccalaureate Qualification (WBQ) accepted, provided the specific proof of certification of the title(s) and level(s) of those qualifications is provided. The WBQ certificate does not provide this specific evidence.

Prior experience in the sector

Applicants that are already working in the sector or have recently worked, should be able to have their experience formally recognised by an Awarding Organisation and this could count towards the qualification(s) in this framework.

Level 2

Title for this framework at level 2

Foundation Apprenticeship in Engineering Manufacture (Operator and Semi-skilled)

Pathways for this framework at level 2

Pathway 1:	Aerospace
Pathway 2:	Marine (Ship, Yacht, Boat building, maintenance and repair)
Pathway 3:	Mechanical Manufacturing Engineering
Pathway 4:	Engineering Maintenance and Installation
Pathway 5:	Fabrication and Welding
Pathway 6:	Materials Processing and Finishing
Pathway 7:	Engineering Technical Support

Level 2, Pathway 1: Aerospace

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 87 credits

Competence - minimum on the job training hours = 215 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 641 training hours

- Competence = minimum 215 hours/ minimum 47 credits
- Knowledge = minimum 180 hours (smallest technical certificate) / minimum 22 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 427 Hours Year 2 = 214 Hours

Minimum credit value - 87 credits

Minimum off-the-job training hours = 426 training hours

Knowledge - City & Guilds Level 2 Certificate In Aircraft Maintenance (Military Aircraft) or Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering) (both 180 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Semi-skilled Fitter (Aircraft assembly)	Riveting, bolting and use of special fasteners to assemble aircraft structures
Aerospace Component Assembly Fitter	Assemble aerospace component assemblies to required tolerances and finishes
Semi-Skilled Electrical Loomers/PCB Assembly	Use the following processes to produce wiring looms: crimping, braiding, termination and soldering. They must also read and interpret drawings and layouts to assemble circuits
Survival Equipment Maintenance Mechanic	Ensure onboard aircraft survival equipment is maintained and remains fully functional
Aero engine (strip and wash) Fitter	Disassemble aero engines and components for cleaning and inspection
Semi-skilled Aircraft Maintenance Fitter	Carry out scheduled maintenance under supervision of aircraft systems: mechanical; electrical; avionic; electronic; optical; pneumatic; hydraulic; engines; weapons or survival equipment to military and CAA quality requirements

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1074/5	City & Guilds	47	215	
C1b	600/1028/9	EAL	47	215	
C1c	601/4455/5	ETC Awards Ltd	47	215	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - City & Guilds Level 2 Diploma in Aircraft Maintenance (Civil Aircraft)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	600/1928/1	City & Guilds	56	485	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7595/0	EAL	39	330	

K4 - City & Guilds Level 2 Certificate in Aircraft Maintenance (Military Aircraft)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/1969/4	City & Guilds	22	180	

K5 - City & Guilds Level 2 Diploma in Aircraft Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/3409/9	City & Guilds	40	340	

K6 - City & Guilds Level 2 Diploma in Engineering - Military Marine and Air Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/2708/3	City & Guilds	42	295	

Knowledge qualifications available to this pathway (cont.)

K7 - City & Guilds Level 2 Diploma in Engineering - Military Air Engineering (Survival Equipment)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/7976/9	City & Guilds	57	447	

K8 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8270/X	Pearson	30	180	

K9 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5670/3	EAL	25	230	

K10 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	601/5669/7	EAL	39	330	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K10 provide the underpinning knowledge for C1a - C1c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience

or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 2, Pathway 2: Marine (Ship, Yacht, Boat building, maintenance and repair)

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 107 credits

Competence - minimum on the job training hours = 215 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 641 training hours

- Competence = minimum 215 hours/ minimum 59 credits
- Knowledge = minimum 180 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 30 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 427 Hours Year 2 = 214 Hours

Minimum credit value - 107 credits

Minimum off-the-job training hours = 426 training hours

Knowledge - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)(180 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Marine Fabricator/Welder (semi-skilled)	Fabrication and welding of thick plate for ship modules /sub-assemblies under supervision
Marine Electrical Fitter (semi-skilled)	Assist skilled personnel with the installation and maintenance of electrical equipment and associated systems
Marine Engine Fitter	Assist skilled fitter to install and maintain large marine propulsion systems
Marine Mechanical Fitter	Assist skilled fitter with the mechanical installation and assembly of marine mechanical equipment
Marine CNC Machinist (semi-skilled)	Operation of machine tools both CNC and manual to fabricate or repair marine equipment
Boat Builder/Shipwright	Produce boats by assembly and installation of interiors and associated furniture/ structural components of bespoke design or from pre cut kits.
Sailmaker	Manufacture of sails - natural and synthetic materials. Manufacture of covers, spray hoods and dodgers
Boat Mover/Yard Hand	Lifting and moving boats ashore. Locate and store boats in dry stack, cradles and patent shoring systems. Launch boats, manoeuvre and secure to pontoons, buoys, moorings. Cleaning hulls
Marine Installation engineer (semi-skilled)	Installation and servicing of engine, fuel systems, propulsion systems, generators , welding and fabrication, machining, hydraulics, pipefitting and take part in sea trials
Marine Painter	Assists with GRP and composites, Gelcoats repairs, moulds, hull repairs, stern tubes/line ups, teak decks, bow thrusters, deck fitting
Rigger/Boatmover	Assists with mast stepping, Rigging, Splicing, working aloft, guard wires, wireless boat moving
Marine fit out carpenter	Install furniture, fittings, linings, plumbing and other associated work (laminating bulkheads) as part of total boat construction
Shipwright	Uses GRP and composites, Gelcoats repairs, moulds, hull repairs, stern tubes/line ups, teak decks, bow thrusters, deck fitting

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Marine Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1031/9	EAL	59	215	
C1b	600/0509/9	Pearson	59	215	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - C&G L2 Certificate in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	600/2304/1	City & Guilds	32	280	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7595/0	EAL	39	330	

K4 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/5190/5	Skills and Education Group Awards	31	260	310

K5 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/8270/X	Pearson	30	180	

K6 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	601/5669/7	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K7 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	603/2243/3	Skills and Education Group Awards	26	230	260

K8 - City & Guilds Level 2 Diploma in Boatbuilding (Foundation)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	603/0348/7	City & Guilds	50	460	

K9 - City & Guilds Level 2 Diploma in Marine Engineering (Foundation)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	603/2237/8	City & Guilds	61	530	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K9 provide the underpinning knowledge for C1a - C1b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience

or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note: All apprentices must receive a company induction programme.**

Additional employer requirements

(No requirement specified)

Level 2, Pathway 3: Mechanical Manufacturing Engineering

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 97 credits

Competence - minimum on the job training hours = 215 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 611 training hours

- Competence = minimum 215 hours/ minimum 54 credits
- Knowledge = minimum 150 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 25 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 407 Hours Year 2 = 204 Hours

Minimum credit value - 97 credits

Minimum off-the-job training hours = 396 training hours

Knowledge - EAL Level 2 Certificate in Cycle Maintenance (150 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Machine Setter Operator	Basic machine setting for batch production activity, material preparation, operate a variety of machines to turn; drill; bore; grind; cut and mill to shape metal workpieces to specification
Machine Tool Fitter (semi-skilled)	Alignment of linear rails and ball screws; Grinding, scraping and other adjustment techniques, pneumatic and hydraulic pipe work working to assembly drawings
Jig and tool Fitter (semi-skilled)	Assemble and repair machine and press tools, dies, jigs, fixtures and other tools
Moulder/Coremaker (semi-skilled)	Work in foundries where metal is melted and cast into parts such as metal components for industrial machinery, turbines, and other industrial equipment
Mechanical Fitter (semi-skilled)	Assembly (under supervision) of mechanical equipment and related systems to required specifications
Semi-skilled Sheet Metal Worker	Fabricate, install, and repair ventilating, heating, and air-conditioning systems; and a wide variety of other fabricated equipment
CNC Operator/Setter	Operating CNC machinery such as lathes, milling machines and grinders. Setting up datums, offsets, tooling. Inspecting and keeping tolerances in high volume production

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Mechanical Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	500/9851/2	EAL	54	215	TotalQualificationTime
C1b	501/0739/2	Pearson	54	215	TotalQualificationTime
C1c	600/2653/4	ETC Awards Ltd	54	215	TotalQualificationTime

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - EAL Level 2 Diploma in Mechanical Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/0979/0	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7595/0	EAL	39	330	

K4 - IMI Level 2 Diploma in Motorsport Vehicle Maintenance & Repair					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/2657/1	IMI	61	494	

K5 - IMI Level 2 Extended Diploma in Motorsport Vehicle Maintenance & Repair					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/2580/3	IMI	79	602	

K6 - City & Guilds Level 2 Certificate in Engineering - Military					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/2539/6	City & Guilds	35	300	

Knowledge qualifications available to this pathway (cont.)

K7 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/8270/X	Pearson	30	180	

K8 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	601/5670/3	EAL	25	230	

K9 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5669/7	EAL	39	330	

K10 - EAL Level 2 Certificate in Cycle Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	603/0586/1	EAL	25	150	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K10 provide the underpinning knowledge for C1a - C1c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience

or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

*Please note: All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 2, Pathway 4: Engineering Maintenance and Installation

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 101 credits

Competence - minimum on the job training hours = 239 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 588 training hours

- Competence = minimum 239 hours/ minimum 63 credits
- Knowledge = minimum 103 hours (based on the smallest technical certificate)
- Knowledge = minimum 20 credits (based on the smallest technical certificate)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 392 Hours Year 2 = 196 Hours

Minimum credit value - 101 credits

Minimum off-the-job training hours = 349 training hours

Knowledge - City & Guilds Level 2 Certificate in Cycle Mechanics or IMIAL Level 2 Certificate in Cycle Maintenance and Repair (both 103 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Mechanical Maintenance Fitter	Carry out preventative maintenance activities on mechanical equipment, deal with breakdowns, restoring components and systems to serviceable condition by repair and replacement
Electronics Maintenance Fitter	Carry out routine maintenance, fault location and testing on electronic equipment and circuits, repair and replace as necessary to restore serviceability
Lift Maintenance (semi-skilled)	Carry out routine maintenance and minor repairs on all types and manufactures of lift and stair lift equipment. Assist skilled personnel on major overhaul and service issues
Electrical Maintenance Fitter	Maintain under supervision, a wide variety electrical equipment including electric motors; generators; power distribution systems; lighting; heating and ventilating systems, carrying out planned preventative maintenance and dealing with daily reactive breakdowns
Military Armourer	Maintenance and repair of military weapons
Marine Maintenance Fitter	Undertake preventative and corrective maintenance of mechanical, electrical systems to include gas turbines, diesel engines, propulsion, power generation and distribution

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Engineering Maintenance and installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	501/0377/5	City & Guilds	63	239	
C1b	501/0147/X	EAL	63	239	
C1c	501/0621/1	Pearson	63	239	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7595/0	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Certificate in Engineering Maintenance on Military Vehicles and Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	600/2116/0	EAL	23	200	

K4 - City & Guilds Level 2 Certificate in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/2304/1	City & Guilds	32	280	

K5 - EAL Level 2 Diploma in Maintenance Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	501/1059/7	EAL	39	330	

K6 - City & Guilds Level 2 Certificate In Aircraft Maintenance (Military Aircraft)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/1969/4	City & Guilds	22	180	

Knowledge qualifications available to this pathway (cont.)

K7 - City & Guilds Level 2 Diploma in Engineering Military Marine and Air Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/2708/3	City & Guilds	42	295	

K8 - City & Guilds Level 2 Certificate in Engineering - Military					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	600/2539/6	City & Guilds	35	300	

K9 - City & Guilds Level 2 Certificate in Cycle Mechanics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	600/0660/2	City & Guilds	20	103	

K10 - IMI Level 2 Certificate in Cycle Maintenance and Repair					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	600/5835/3	IMI	20	103	

Knowledge qualifications available to this pathway (cont.)

K11 - EAL Level 2 Diploma in Electrical Installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	600/6724/X	EAL	50	486	

K12 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	500/8270/X	Pearson	30	180	

K13 - City & Guilds Level 2 Diploma in Electrical Installations (Buildings and Structures)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	600/5498/0	City & Guilds	49	454	

K14 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/5670/3	EAL	25	230	

Knowledge qualifications available to this pathway (cont.)

K15 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/5669/7	EAL	39	330	

K16 - City & Guilds Level 2 Certificate in Light Vehicle Maintenance and Repair Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	600/1177/4	City & Guilds	34	310	

K17 - EAL Level 2 Certificate in Cycle Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	603/0586/1	EAL	25	150	

K18 - EAL Level 2 Intermediate Diploma in Electrical Installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/4561/4	EAL	50	486	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K18 provide the underpinning knowledge for C1a - C1c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience

or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

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

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below:

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

*Please note: All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 2, Pathway 5: Fabrication and Welding

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 88 credits

Competence - minimum on the job training hours = 214 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 630 training hours

- Competence = minimum 214 hours/ minimum 47 credits
- Knowledge = minimum 170 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 23 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 420 Hours Year 2 = 210 Hours

Minimum credit value - 88 credits

Minimum off-the-job training hours = 416 training hours

Knowledge - EAL Level 2 Certificate in Positional Welding (170 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Maintenance Welding Operative	Under direction, performs skilled welding in the repair, modification, and fabrication of equipment and facilities; makes minor mechanical repairs on a variety of heavy equipment; and performs related duties as required
Fitter Welder	Fabricate and assemble metal parts by MIG; TIG; Argon Arc welding, brazing and soldering
Pipe Fitter	Measure and cut required piping using hand or machine tools, install and fit piping into position, join sections, test and repair
Semi-skilled Sheet Metal Worker	Working with metals up to 3mm thick working from drawings to mark out shapes on the metal before cutting out, shaping and joining materials using thermal cutting and TIG;MIG and Argon Arc joining techniques
Welder / Fabricator (thick plate semi-skilled)	Working with metals more than 3 mm thick, using engineering drawings, jigs and templates, cut and shape materials using manual or automated processes including thermal cutting TIG; MIG and Argon Arc welding methods

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Fabrication and Welding Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9174/5	EAL	47	214	
C1b	601/0077/1	City & Guilds	47	214	
C1c	601/1820/9	ETC Awards Ltd	47	214	

Knowledge qualifications available to this pathway

K1 - EAL Level 2 Diploma in Fabrication and Welding Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1058/5	EAL	39	330	

K2 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7595/0	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Certificate in Positional Welding					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	501/1807/9	EAL	23	170	

K4 - City & Guilds Level 2 Certificate in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/2304/1	City & Guilds	32	280	

K5 - City & Guilds Level 2 Certificate in Engineering - Military					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/2539/6	City & Guilds	35	300	

K6 - City & Guilds Level 2 Certificate in Light Vehicle Maintenance and Repair Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/1177/4	City & Guilds	34	310	

Knowledge qualifications available to this pathway (cont.)

K7 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/5190/5	Skills and Education Group Awards	31	260	310

K8 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8270/X	Pearson	30	180	

K9 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5670/3	EAL	25	230	

K10 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	601/5669/7	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K11 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	600/0881/7	City & Guilds	42	360	

K12 - Skills and Education Group Awards Level 2 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	603/2243/3	Skills and Education Group Awards	26	230	260

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K12 provide the underpinning knowledge for C1a - C1c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience

or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

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Employee rights and responsibilities

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There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 2, Pathway 6: Materials Processing and Finishing

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 74 credits

Competence - minimum on the job training hours = 215 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 571 training hours

- Competence = minimum 215 hours/ minimum 38 credits
- Knowledge = minimum 110 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 18 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 381 Hours Year 2 = 190 Hours

Minimum credit value - 74 credits

Minimum off-the-job training hours = 356 training hours

Knowledge - EAL Level 2 Certificate in Metals Industries Processes (110 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Mould and Core Maker	Make or form wax or sand cores or moulds used in the production of metal castings in foundries
Process engineer (Casting)	Responsible for ensuring the process is continually optimised. This will be by defining key process variables, implementing control measures and managing result data to ensure optimum performance is maintained
Sand Caster	Producing sand moulds using loose and plated patterns. Locating, assembling and setting cores. Closing and securing sand moulds for casting
Die Caster	Operate or tend metal moulding, casting, or coremaking machines to mould or cast metal products. Machines include centrifugal casting machines, vacuum casting machines, turnover draw-type coremaking machines, conveyor-screw coremaking machines, and die casting machines
Casting Inspector	Inspect castings using a variety of techniques such as radiographic; magnetic particle; penetrant dye; ultrasonic crack detection

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Materials Processing and Finishing					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9591/X	EAL	38	215	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7595/0	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Certificate in Metals Industries Processes					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7998/0	EAL	18	110	

K4 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8270/X	Pearson	30	180	

K5 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	601/5670/3	EAL	25	230	

K6 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	601/5669/7	EAL	39	330	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K6 provide the underpinning knowledge for C1a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 2, Pathway 7: Engineering Technical Support

Description of this pathway

Pathway duration approximately 18 months depending on the qualification and unit options selected.

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 92 credits

Competence - minimum on the job training hours = 215 training hours

Off the job training includes a minimum of 246 additional training hours for Essential Skills and Mentoring.

Pathway with minimum total learning hours = 641 training hours

- Competence = minimum 215 hours/ minimum 51 credits
- Knowledge = minimum 180 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 23 credits (based on the smallest technical certificate credit)
- Essential Skills Wales (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 66 weeks x 1 hour/week = 66 hours

Year 1 = 427 Hours Year 2 = 214 Hours

Minimum credit value - 92 credits

Minimum off-the-job training hours = 426 training hours

Knowledge - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering) (180 training hours) plus 246 additional training hours for Essential Skills and Mentoring

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Production Engineering (semi-skilled)	Day to day support for manufacturing/ engineering processes
Non-Destructive Testing	Carrying out radiographic, ultra-sonic, dye penetrant & magnetic particle inspection on components manufactured in metals, alloys & composites
Technical Support	Provides support for areas of the technical support function including communications software, test tools, performance, capacity planning, and eCommerce technology as required. Works as team member to develop, design and implement technical support systems or to complete specialty functions
Quality Control Inspector	Carry out end of operation inspection to ensure machined components meet required tolerance and surface finish requirements
Metrology Assistant	Assist with the calibration of manufacturing gauges and measurement devices in controlled temperature environments to ensure they are accurately calibrated to required standards

Qualifications

Competence qualifications available to this pathway

C1 - Level 2 NVQ Diploma in Engineering Technical Support					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	501/0372/6	EAL	51	215	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 2 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/0881/7	City & Guilds	42	360	

K2 - EAL Level 2 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7595/0	EAL	39	330	

Knowledge qualifications available to this pathway (cont.)

K3 - EAL Level 2 Certificate in Engineering Maintenance on Military Vehicles and Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	600/2116/0	EAL	23	200	

K4 - Pearson BTEC Level 2 Extended Certificate in Engineering (Specialist: Manufacturing Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8270/X	Pearson	30	180	

K5 - EAL Level 2 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	601/5670/3	EAL	25	230	

K6 - EAL Level 2 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	601/5669/7	EAL	39	330	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K6 provides the underpinning knowledge for C1a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications support key areas of technical knowledge development needed for apprentices in engineering and manufacturing industries to carry out their duties in a safe and efficient manner.

Delivery methods for knowledge based qualifications may vary, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required, including a broad range of mathematical, scientific and engineering manufacturing principles and processes.

After completing the designated knowledge qualification apprentices should be able to:

- understand health and safety requirements
- be able to communicate in an engineering manufacturing environment
- be able to work effectively in an engineering manufacturing environment
- understand basic engineering manufacturing principles and processes.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	1
Application of numbers	1
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 24 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as a Diploma in Engineering, Pre-Apprenticeship programme or extended work experience. More specifically they may:

- have previous employment or work experience in the sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed an Enhanced Engineering Programme (formerly Pathways to Engineering programme) or
- have completed the Essential Skills Qualifications (EQS) or
- have GCSE's in English, Maths and Science (grade D to E or higher/new equivalent grade 2 or higher) or
- have a Welsh Baccalaureate or
- be keen and motivated to work in the engineering/manufacturing industry or
- be practically minded and want to work with their hands or
- be willing to undertake a course of training both on-the-job and off-the job and apply this learning in the workplace or
- have completed a Young Apprenticeship or similar in Engineering or other related area or
- have completed tests in basic numeracy, literacy and communications skills and have spatial awareness.

Other entrants may have experience from working in the sector in a manufacturing context, and are now seeking to become qualified by undertaking an apprenticeship programme.

Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression routes from this pathway

More generally, most ex-apprentices will start off by carrying out semi-skilled job roles within manufacturing and engineering (see job roles described for the pathway). It is likely that a period of consolidation will be required in these roles before progression can take place.

Most will aspire to a combination of internal promotion within their companies to team leader or supervisor level, while at the same time this affords the opportunity to undertake Further Education qualifications or an Apprenticeship to upgrade their competence and knowledge to fully skilled status. The Apprenticeship offers a choice of 14 occupational sub-sectors such as aerospace, automotive, marine, electrical/electronics etc. This gives wide ranging opportunity.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work
600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:
customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3

Title for this framework at level 3

Apprenticeship in Engineering Manufacture (Craft and Technician)

Pathways for this framework at level 3

Pathway 1:	Aerospace
Pathway 2:	Marine (Ship building, maintenance and repair)
Pathway 3:	Mechanical Manufacturing Engineering
Pathway 4:	Marine (Yacht and Boat building, maintenance and repair)
Pathway 5:	Engineering Maintenance
Pathway 6:	Fabrication and Welding
Pathway 7:	Materials Processing and Finishing
Pathway 8:	Engineering Technical Support
Pathway 9:	Electrical and Electronic Engineering
Pathway 10:	Installation and Commissioning
Pathway 11:	Engineering Toolmaking
Pathway 12:	Automotive
Pathway 13:	Engineering Woodworking, Pattern and Modelmaking
Pathway 14:	Engineering Leadership

Level 3, Pathway 1: Aerospace

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 143 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Aeronautical Engineering - total minimum pathway credit value = 228 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1135 training hours

- Competence = minimum 441 hours/ minimum 165 credits
- Knowledge = minimum 360 hours (smallest technical certificate) / minimum 60 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 324 Hours Year 2 = 324 Hours Year 3 = 324 Hours Year 4 = 163 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering and Pearson BTEC Level 3 Extended Certificate in Engineering (both 360 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 441 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Aeronautical Engineering

Minimum credit value = 143 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 1012 training hours

- Competence = minimum 318 hours/ minimum 138 credits
- Knowledge = minimum 360 hours (smallest technical certificate) / minimum 60 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 289 Hours Year 2 = 289 Hours Year 3 = 289 Hours Year 4 = 145 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 318 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Aeronautical Engineering

Minimum credit value - 216 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Aeronautical Engineering

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Aircraft Systems Fitter (Manufacture)	Installation and functional testing of aircraft systems: electrical; electronic; avionic; optical; pneumatic or hydraulic
Aero Engine Fitter (Manufacture)	Assembly of engine modules: compressors; combustors; turbines; fuel systems; control systems; or final assembly of engine
Aero Engine Fitter/Tester	Production or development testing of aero engines to agreed performance and safety specifications
Aircraft Systems Development Technician	Development and testing of new aircraft systems: mechanical; electrical; avionic; electronic; optical; pneumatic or hydraulic
Aircraft Maintenance Fitter	Maintenance and inspection of aircraft systems: mechanical; electrical; avionic; electronic; optical; pneumatic; hydraulic; engines; weapons or survival equipment to military and CAA quality standards
Composite Technician	Perform repairs to aircraft composite components using the following materials: fibreglass; carbon fibre; aramid (nomex and kevlar) using wet lay-up; prepreg lay-up; metal-to-metal bonding utilising vacuum bagging and hot bonding techniques
Airframe Fitter (Manufacture)	Assembly of wings/ fuselage or major sub-assemblies, including installation of mechanical; electrical; avionic; electronic; pneumatic; hydraulic; optical; weapons and survival equipment.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/2083/0	EAL	165	441	
C1b	601/0080/1	City & Guilds	165	441	
C1c	601/4457/9	ETC Awards Ltd	165	441	

C2 - *Level 3 NVQ Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/1037/X	EAL	138	318	
C2b	600/1575/5	City & Guilds	138	318	
C2c	600/1706/5	ETC Awards Ltd	138	318	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Aircraft Maintenance Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1113/9	EAL	78	600	
K2 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1130/9	EAL	78	600	
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	
K4 - City & Guilds Level 3 Diploma for On-Aircraft Maintenance - Category A					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/1927/X	City & Guilds	72	595	

Knowledge qualifications available to this pathway (cont.)

K5 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Civil Aircraft Electrical and Avionics)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/1970/0	City & Guilds	73	585	

K6 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Civil Aircraft Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/1929/3	City & Guilds	80	655	

K7 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/1972/4	City & Guilds	79	645	

K8 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Weapons Maintenance)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	600/1973/6	City & Guilds	80	720	

Knowledge qualifications available to this pathway (cont.)

K9 - City & Guilds Level 3 Diploma in Aircraft Manufacture (Electrical and Avionics Manufacture)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	600/1932/3	City & Guilds	60	475	

K10 - City & Guilds Level 3 Diploma in Aircraft Manufacture (Mechanical Manufacture)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	600/1925/6	City & Guilds	62	490	

K11 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	500/7799/5	Pearson	120	720	

K12 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Electrical and Avionics)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	600/1971/2	City & Guilds	72	575	

Knowledge qualifications available to this pathway (cont.)

K13 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	500/7315/1	Pearson	120	720	
K14 - Pearson BTEC Level 3 Extended Diploma in Aircraft Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	500/8099/4	Pearson	180	1080	
K15 - City & Guilds Level 3 Diploma in Aeronautical Engineering (Survival Equipment) Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	600/2320/X	City & Guilds	66	570	
K16 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	500/7319/9	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K17 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	500/8154/8	Pearson	120	720	

K18 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	500/8098/2	Pearson	120	720	

K19 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	500/7283/3	Pearson	120	720	

K20 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	500/8165/2	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K21 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	500/7800/8	Pearson	180	1080	
K22 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	500/8097/0	Pearson	180	1080	
K23 - IMI Level 3 Diploma in Vehicle Accident Repair Paint Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	500/9688/6	IMI	83	690	
K24 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K25 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	601/5802/5	EAL	98	750	
K26 - Pearson BTEC Level 3 National Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	601/7577/1	Pearson	120	720	
K27 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K27a	601/7584/9	Pearson	60	360	
K28 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K28a	601/7591/6	Pearson	90	540	

Knowledge qualifications available to this pathway (cont.)

K29 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K29a	601/7580/1	Pearson	120	720	

K30 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K30a	601/7579/5	Pearson	120	720	

K31 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K31a	601/7583/7	Pearson	120	720	

K32 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K32a	601/7582/5	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K33 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K33a	601/7577/1	Pearson	120	720	

K34 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K34a	601/7588/6	Pearson	180	1080	

K35 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K35a	601/7587/4	Pearson	180	1080	

K36 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K36a	601/7585/0	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K37 - **Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K37a	603/0450/9	Pearson	120	480	

K38 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K38a	603/0564/2	EAL	148	1095	

K39 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K39a	603/0485/6	Pearson	120	480	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Aeronautical Engineering - for use by 25 years+ only (see below)**

K1 - K39 provide underpinning knowledge for C1a - C1c and C2a - C2c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Apprentices must complete one of the Level 3 NVQ Extended Diploma's. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

*** Note:** The Level 3 NVQ Diploma in Aeronautical Engineering may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies and in some cases relevant vocational activity such as Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering or manufacturing sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an aerospace engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Aerospace

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 2: Marine (Ship building, maintenance and repair)

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 188 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Marine Engineering - total minimum pathway credit value = 161 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 983 training hours

- Competence = minimum 424 hours/ minimum 142 credits
- Knowledge = minimum 225 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 281 Hours Year 2 = 281 Hours Year 3 = 281 Hours Year 4 = 140 Hours

Minimum off-the-job training hours = 559 training hours

Knowledge - EAL Level 3 Certificate in Engineering Technology (225 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 424 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Marine Engineering

Minimum credit value = 188 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 860 training hours

- Competence = minimum 301 hours/ minimum 115 credits
- Knowledge = minimum 225 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 246 Hours Year 2 = 246 Hours Year 3 = 246 Hours Year 4 = 122 Hours

Minimum off-the-job training hours = 559 training hours

Minimum on-the-job training hours = 301 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Marine Engineering

Minimum credit value = 161 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Marine Engineering

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Marine Fabricator/Welder	Fabrication and welding of thick plate for ship modules / sub-assemblies
Marine Electrical Fitter	Installation, maintenance and repair of electrical equipment and associated systems
Marine Pipe-Fitter	Fabricate, weld, and install pipe systems within marine applications
Marine Engine Fitter	Installation, maintenance and repair of large marine propulsion systems
Marine Mechanical Fitter	Installation, assembly, maintenance and repair of marine mechanical equipment
Marine Electronics Technician	Installation, maintenance and repair of marine electronic equipment associated with power, propulsion, control, navigation and communications
Specialist Welder (Submarines)	Welding of specialist steels (Q1N) for submarine pressure hulls
Marine Machinist	Operation of machine tools both CNC and manual to fabricate or repair marine equipment
Marine Carpenter	Outfitting of marine interiors for ships

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Marine Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1764/8	EAL	142	424	

C2 - *Level 3 NVQ Diploma in Marine Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/1054/X	EAL	115	301	
C2b	501/1526/1	Pearson	115	301	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	600/0882/9	City & Guilds	54	480	
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	
K4 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/2306/5	City & Guilds	49	450	
K5 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/8098/2	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K6 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/7283/3	Pearson	120	720	

K7 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/8154/8	Pearson	120	720	

K8 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	601/5800/1	EAL	28	225	

K9 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5799/9	EAL	48	375	

Knowledge qualifications available to this pathway (cont.)

K10 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	601/5801/3	EAL	68	525	
K11 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	601/7584/9	Pearson	60	360	
K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	601/7591/6	Pearson	90	540	
K13 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/7579/5	Pearson	120	720	

K15 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/7583/7	Pearson	120	720	

K16 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	603/0450/9	Pearson	120	480	

K17 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	603/0564/2	EAL	148	1095	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Marine Engineering - for use by 25yrs+ only (see below)**

K1 - K19 provide underpinning knowledge for C1a and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Marine Engineering may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road,
Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the marine sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in a marine engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Marine (Ship building, maintenance and repair):

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 3: Mechanical Manufacturing Engineering

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 152 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Mechanical Manufacturing Engineering - total minimum pathway credit value = 125 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 953 training hours

- Competence = minimum 439 hours/ minimum 106 credits
- Knowledge = minimum 180 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 272 Hours Year 2 = 272 Hours Year 3 = 272 Hours Year 4 = 137 Hours

Minimum off-the-job training hours = 514 training hours

Knowledge - Pearson BTEC Level 3 Certificate in Engineering (180 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 439 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Mechanical Manufacturing Engineering

Minimum credit value = 152 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 830 training hours

- Competence = minimum 316 hours/ minimum 79 credits
- Knowledge = minimum 180 hours (smallest technical certificate) / minimum 28 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 237 Hours Year 2 = 237 Hours Year 3 = 237 Hours Year 4 = 119 Hours

Minimum off-the-job training hours = 514 training hours

Minimum on-the-job training hours = 316 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Mechanical Manufacturing Engineering

Minimum credit value - 125 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Mechanical Manufacturing Engineering

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Skilled Machinist	Machine components by applying a variety of removal and shaping techniques such as boring; cutting; drilling; milling; grinding and lapping.
Tool-maker	Work from engineering drawings to make precision tools, special guides and holding devices for use in manufacturing.
Metal Forger	Forging methods include forging, drop forging, upset forging and the shaping of metal parts utilising heat and the force of power or hand hammers to produce required dimensions and contours
Skilled Sheet Metal Worker	Fabricate, install, and repair ventilating, heating, and air-conditioning systems; stainless-steel kitchen and beverage equipment; and a wide variety of other products made of sheet metal.
Skilled Fitter	Assembly of mechanical equipment and related systems to required specifications
Composite Manufacturer	Produce composite mouldings using the following techniques: Wet Lay Up; Pre Peg Lamination; Acrylic Moulding; Vacuum Forming; Bonding; Assembly using hand tool techniques
Pipe Fitter and Assembler	Manufacture Pipes (small bore, ferrous, non ferrous) using machine and hand bending techniques, joining by fillet welding and brazing.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Mechanical Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1701/6	EAL	106	439	
C1b	601/0081/3	City & Guilds	106	439	
C1c	601/2548/2	Pearson	106	439	
C1d	601/4493/2	ETC Awards Ltd	106	439	
C2 - *Level 3 NVQ Diploma in Mechanical Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	501/1803/1	City & Guilds	79	316	
C2b	500/9852/4	EAL	79	316	
C2c	501/0794/X	Pearson	79	316	
C2d	600/3428/2	ETC Awards Ltd	79	316	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Mechanical Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1155/3	EAL	78	600	
K2 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1130/9	EAL	78	600	
K3 - EAL Level 3 Diploma in Mechanical Engineering Technology (Progressive)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	501/1422/0	EAL	97	750	
K4 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/0882/9	City & Guilds	54	480	

Knowledge qualifications available to this pathway (cont.)

K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7841/0	Pearson	60	360	

K6 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/8154/8	Pearson	120	720	

K7 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/7283/3	Pearson	120	720	

K8 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/7319/9	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K9 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/7799/5	Pearson	120	720	
K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/7315/1	Pearson	120	720	
K11 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	500/8165/2	Pearson	180	1080	
K12 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	600/2306/5	City & Guilds	49	450	

Knowledge qualifications available to this pathway (cont.)

K13 - EAL Level 3 Diploma in Maintenance Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	501/1112/7	EAL	78	600	
K14 - Pearson BTEC Level 3 90-credit Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	600/3888/3	Pearson	90	540	
K15 - EAL Level 3 Diploma in Cycle Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	501/0988/1	EAL	37	260	
K16 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	500/7296/1	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K17 - Pearson BTEC Level 3 Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	500/8156/1	Pearson	30	180	

K18 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/5800/1	EAL	28	225	

K19 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/5799/9	EAL	48	375	

K20 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K21 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	601/5802/5	EAL	98	750	
K22 - City & Guilds Level 3 Advanced Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	601/4506/7	City & Guilds	120	720	
K23 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	601/7584/9	Pearson	60	360	
K24 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	601/7591/6	Pearson	90	540	

Knowledge qualifications available to this pathway (cont.)

K25 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	601/7580/1	Pearson	120	720	

K26 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	601/7583/7	Pearson	120	720	

K27 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K27a	601/7582/5	Pearson	120	720	

K28 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K28a	601/7577/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K29 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K29a	601/7588/6	Pearson	180	1080	

K30 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K30a	601/7590/4	Pearson	180	1080	

K31 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K31a	601/7589/8	Pearson	180	1080	

K32 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K32a	603/0450/9	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K33 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K33a	603/0564/2	EAL	148	1095	
K34 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K34a	603/0485/6	Pearson	120	480	
K35 - University Certificate in Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K35a	N/A	University of South Wales	60	600	
K36 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K36a	N/A	University of South Wales	N/A	N/A	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Mechanical Manufacturing Engineering - for use by 25 years+ only (see below)**

K1 - K36 provide underpinning knowledge for C1a - C1d and C2a - C2d

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Apprentices must complete one of the Level 3 NVQ Extended Diplomas. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Mechanical Manufacturing Engineering may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge

and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Framework Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the mechanical manufacturing sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in a mechanical manufacturing engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Mechanical Manufacturing Engineering:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 4: Marine (Yacht and Boat building, maintenance and repair)

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 181 credits

Pathway with minimum total learning hours = 995 training hours

- Competence = minimum 301 hours/ minimum 115 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 48 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 284 Hours Year 2 = 284 Hours Year 3 = 284 Hours Year 4 = 143 Hours

Minimum off-the-job training hours = 799 training hours

Knowledge - Pearson BTEC Level 3 Extended Certificate in Engineering (360 training hours)
plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 301 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Marine Engineering

Minimum credit value = 181 credits

Entry requirements for this pathway in addition to the framework entry requirements

It is highly recommended that candidates should have completed the 600/2304/1 City & Guilds Level 2 Certificate in Marine Construction, Systems Engineering and Maintenance qualification prior to entering this pathway.

Job title(s)	Job role(s)
Marine Engineer	Installation, maintenance and repair of fuel systems, propulsion systems, generators , welding and fabrication, machining, hydraulics, pipefitting and sea trials
Marine Electrician	Installation, maintenance and repair of instrumentation and panels, wiring looms, engines, generators, batteries and chargers.
Shipwright (Boat builder)	Uses GRP and composites, Gel-coats repairs, moulds, hull repairs, stern tubes/line ups, teak decks, bow thrusters, deck fitting
Marine Painter	Spray painting / refinishing, filling and fairing, hard painting , varnishing and anti-fouling
Rigger/Boatmover	Mast stepping, Rigging, Splicing, working aloft, guard wires, wireless boat moving
Fit out Carpenter	Install furniture, fittings, linings, plumbing and other associated work (laminating bulkheads) as part of total boat construction
Fit out Engineer	Installation of engines, looms, plumbing and all electrical wiring and connections
Marine Electronics Technician	Installation, maintenance and repair of marine electronic equipment associated with power, propulsion; control; navigation; entertainment and communications

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Diploma in Marine Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1054/X	EAL	115	301	
C1b	501/1526/1	Pearson	115	301	

Knowledge qualifications available to this pathway

K1 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/2306/5	City & Guilds	49	450	

K2 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/8154/8	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K3 - City & Guilds Level 3 Diploma in Engineering - Marine					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	600/2483/5	City & Guilds	94	863	
K4 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	601/5799/9	EAL	48	375	
K5 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	601/5801/3	EAL	68	525	
K6 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	601/7584/9	Pearson	60	360	

Knowledge qualifications available to this pathway (cont.)

K7 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	601/7591/6	Pearson	90	540	
K8 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	601/7580/1	Pearson	120	720	
K9 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	603/0450/9	Pearson	120	480	
K10 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	603/0564/2	EAL	148	1095	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

K1 - K10 provide underpinning knowledge for C1a - C1b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Apprentices must complete one of the Level 3 NVQ Extended Diploma's. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hour requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into the pathway

Entrants to this pathway may be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience. Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the marine sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in a marine engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Marine (Yacht and Boat building, maintenance and repair):

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 5: Engineering Maintenance

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 220 credits

The Servicing Medical Equipment route = 227 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Engineering Maintenance - total minimum pathway credit value = 205 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 940 training hours

- Competence = minimum 426 hours/ minimum 179 credits
- Knowledge = minimum 180 hours (smallest technical certificate) / minimum 23 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 273 Hours Year 2 = 273 Hours Year 3 = 273 Hours Year 4 = 136 Hours

Minimum off-the-job training hours = 514 training hours

Knowledge - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment (180 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 426 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Engineering Maintenance

Minimum credit value = 220 credits

Level 3 NVQ Extended Diploma - Servicing Medical Equipment

Pathway with minimum total learning hours = 1046 training hours

- Competence = minimum 532 hours/ minimum 186 credits
- Knowledge = minimum 180 hours (smallest technical certificate) / minimum 23 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 299 Hours Year 2 = 299 Hours Year 3 = 299 Hours Year 4 = 149 Hours

Minimum off-the-job training hours = 514 training hours

Knowledge - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment (180 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 532 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Engineering Maintenance (Servicing Medical Equipment)

Minimum credit value = 227 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 817 training hours

- Competence = minimum 303 hours/ minimum 152 credits
- Knowledge = minimum 180 hours (smallest technical certificate) / minimum 23 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 233 Hours Year 2 = 233 Hours Year 3 = 233 Hours Year 4 = 118 Hours

Minimum off-the-job training hours = 514 training hours

Minimum on-the-job training hours = 303 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Engineering Maintenance

Minimum credit value - 193 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Engineering Maintenance

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Mechanical Maintenance Technician	Carry out routine and emergency fault diagnosis and maintenance on mechanical equipment, restoring mechanical components to usable condition by repair, producing replacement components, assisting in the installation of mechanical equipment and carry out quality inspections.
Electronics Maintenance Technician	Carry out routine and emergency fault diagnosis and maintenance, test and repair electronic equipment and circuits/ communications equipment/ instrumentation and control equipment, service medical equipment and carry out quality inspections
Electrical Maintenance Technician	Carry out routine and emergency fault diagnosis, maintenance and testing on electrical equipment and circuits, modifying or rewiring electrical circuits, assisting in the installation of electrical/ electronic equipment and carry out quality inspections
Fluid Power Maintenance Technician	Carry out routine and emergency fault diagnosis, maintenance and testing on pneumatic/ hydraulic equipment and circuits, assisting in the installation of fluid power equipment and carry out quality inspections
Lift Services Maintenance Technician	Carry out routine and emergency fault diagnosis on lifts/escalators, inspecting and servicing lift/escalator equipment, rectifying and repairing faults in lifts/escalators and carrying out quality inspections
Plant and Systems Maintenance Technician	Carry out routine and emergency fault diagnosis and maintenance on mechanical and electrical equipment and systems, modifying or restoring plant/systems to usable condition by repair, producing replacement components, assisting in the installation of equipment and carry out quality inspections

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Engineering Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/2084/2	EAL	179	426	
C1b	601/0079/5	City & Guilds	179	426	
C1c	601/2543/3	Pearson	179	426	
C1d	601/4494/4	ETC Awards Ltd	179	426	
C2 - *Level 3 NVQ Diploma in Engineering Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	501/0458/5	City & Guilds	152	303	
C2b	501/0544/9	EAL	152	303	
C2c	501/0631/4	Pearson	152	303	
C2d	600/2253/X	ETC Awards Ltd	152	303	

Competence qualifications available to this pathway (cont.)

C3 - Level 3 NVQ Extended Diploma in Engineering Maintenance (Servicing Medical Equipment)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C3a	601/8762/1	Open College Network West Midlands	186	532	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Maintenance Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1112/7	EAL	78	600	

K2 - EAL Level 3 Diploma in Cycle Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/0988/1	EAL	37	260	

K3 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K4 - EAL Level 3 Diploma in Maintenance Engineering Technology (Progressive)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	501/1570/4	EAL	97	750	

K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7841/0	Pearson	60	360	

K6 - EAL Level 3 Diploma in Equipment Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/1026/5	EAL	46	350	

K7 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/2306/5	City & Guilds	49	450	

Knowledge qualifications available to this pathway (cont.)

K8 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	600/0882/9	City & Guilds	54	480	

K9 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/7315/1	Pearson	120	720	

K10 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/8165/2	Pearson	180	1080	

K11 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	500/7283/3	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K12 - City & Guilds Level 3 Diploma in Engineering - Weapons Engineering Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	600/3166/9	City & Guilds	65	573	

K13 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	500/7319/9	Pearson	120	720	

K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	500/8098/2	Pearson	120	720	

K15 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	500/8154/8	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K16 - City & Guilds Level 3 Diploma in Engineering - Marine					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	600/2483/5	City & Guilds	94	863	
K17 - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	600/2119/6	EAL	23	180	
K18 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	500/8097/0	Pearson	180	1080	
K19 - Pearson BTEC Level 3 Extended Diploma in Operations and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	500/7317/5	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K20 - Pearson BTEC Level 3 90-credit Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	600/3888/3	Pearson	90	540	

K21 - City & Guilds Level 3 Diploma for On-Aircraft Maintenance - Category A					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	600/1927/X	City & Guilds	72	595	

K22 - City & Guilds Level 3 Diploma in Engineering - Military Vehicles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	600/4204/7	City & Guilds	68	573	

K23 - City & Guilds Level 3 Diploma in Engineering - Armourers					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	600/4203/5	City & Guilds	46	403	

Knowledge qualifications available to this pathway (cont.)

K24 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	500/7296/1	Pearson	180	1080	

K25 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	601/5800/1	EAL	28	225	

K26 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	601/5799/9	EAL	48	375	

K27 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K27a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K28 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K28a	601/5802/5	EAL	98	750	

K29 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K29a	601/7584/9	Pearson	60	360	

K30 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K30a	601/7591/6	Pearson	90	540	

K31 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K31a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K32 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K32a	601/7579/5	Pearson	120	720	

K33 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K33a	601/7583/7	Pearson	120	720	

K34 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K34a	601/7582/5	Pearson	120	720	

K35 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K35a	601/7588/6	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K36 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K36a	601/7587/4	Pearson	180	1080	

K37 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K37a	601/7590/4	Pearson	180	1080	

K38 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K38a	601/7589/8	Pearson	180	1080	

K39 - Open College Network West Midlands Level 3 Certificate in Principles of Servicing Medical Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K39a	601/8764/5	Open College Network West Midlands	23	186	

Knowledge qualifications available to this pathway (cont.)

K40 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K40a	603/0450/9	Pearson	120	480	

K41 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K41a	603/0564/2	EAL	148	1095	

K42 - AQA Level 3 Technical Level Engineering: Mechatronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K42a	601/7080/3	AQA	72	720	

K43 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K43a	603/0485/6	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K44 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K44a	N/A	University of Wales (Trinity St Davids)	120	N/A	

K45 - HNC Electrical / Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K45a	N/A	University of Wales (Trinity St Davids)	120	N/A	

K46 - HND Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K46a	N/A	University of Wales (Trinity St Davids)	240	960	

K47 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K47a	501/1121/8	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K48 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K48a	N/A	University of South Wales	N/A	N/A	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Engineering Maintenance - for use by 25 years+ only (see below)**

K1 - K48 provide underpinning knowledge for C1a - C1d and C2a - C2d and C3a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete one of the Level 3 NVQ Extended Diplomas. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Engineering Maintenance may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road,
Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into the pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an engineering maintenance environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Engineering Maintenance:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below:

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 6: Fabrication and Welding

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 197 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Fabrication and Welding - total minimum pathway credit value = 170 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1075 training hours

- Competence = minimum 516 hours/ minimum 151 credits
- Knowledge = minimum 225 hours (smallest technical certificate) / minimum 28 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 307 Hours Year 2 = 307 Hours Year 3 = 307 Hours Year 4 = 154 Hours

Minimum off-the-job training hours = 559 training hours

Knowledge - EAL Level 3 Certificate in Engineering Technology (225 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 516 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Fabrication and Welding

Minimum credit value = 107 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 952 training hours

- Competence = minimum 393 hours/ minimum 124 credits
- Knowledge = minimum 225 hours (smallest technical certificate) / minimum 28 credits
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 272 Hours Year 2 = 272 Hours Year 3 = 272 Hours Year 4 = 136 Hours

Minimum off-the-job training hours = 559 training hours

Minimum on-the-job training hours = 393 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Fabrication and Welding

Minimum credit value - 170 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Fabrication and Welding

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Sheet Metal Worker	Use metals/materials up to 3mm thick working from drawings to mark out shapes on the metal before cutting out. Cut, shape and join materials using hand/CNC cutting and pressing machines/thermal cutting equipment, fabricate and assemble pipework, produce and finish composite mouldings and assemblies
Plater / Fabricator	Using metals more than 3 mm thick working from engineering drawings and templates to mark out, cut and shape materials using manual or automated processes including thermal cutting equipment and join materials using fasteners or welding methods
Welder	Join sections, pipes, tubes or plates together by a manual or automated process. Plan, implement and monitor welding resources and activities, quality check welds, identify and solve problems. They usually specialise in more than one welding process according to product need

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Fabrication and Welding					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9932/X	EAL	151	516	
C1b	601/0083/7	City & Guilds	151	516	
C1c	601/4319/8	ETC Awards Ltd	151	516	

C2 - *Level 3 NVQ Diploma in Fabrication and Welding					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	601/0078/3	City & Guilds	124	393	
C2b	601/0003/5	EAL	124	393	
C2c	601/1853/2	ETC Awards Ltd	124	393	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	
K2 - EAL Level 3 Diploma in Fabrication and Welding Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1131/0	EAL	78	600	
K3 - EAL Level 3 Diploma in Fabrication and Welding Engineering Technology (Progressive)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	501/1310/0	EAL	97	750	
K4 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	600/0882/9	City & Guilds	54	480	

Knowledge qualifications available to this pathway (cont.)

K5 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7841/0	Pearson	60	360	

K6 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/2306/5	City & Guilds	49	450	

K7 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/8154/8	Pearson	120	720	

K8 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/7283/3	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K9 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/7319/9	Pearson	120	720	
K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/7315/1	Pearson	120	720	
K11 - Pearson BTEC Level 3 90-credit Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	600/3888/3	Pearson	90	540	
K12 - Skills and Education Group Awards Level 3 Diploma in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	600/5130/9	Skills and Education Group Awards	57	480	570

Knowledge qualifications available to this pathway (cont.)

K13 - Skills and Education Group Awards Level 3 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	600/5194/2	Skills and Education Group Awards	29	240	290

K14 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/5800/1	EAL	28	225	

K15 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/5799/9	EAL	48	375	

K16 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K17 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/5802/5	EAL	98	750	

K18 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/7584/9	Pearson	60	360	

K19 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/7591/6	Pearson	90	540	

K20 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K21 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	601/7583/7	Pearson	120	720	

K22 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	601/7582/5	Pearson	120	720	

K23 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	603/0450/9	Pearson	120	480	

K24 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	603/0564/2	EAL	148	1095	

Knowledge qualifications available to this pathway (cont.)

K25 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	603/0485/6	Pearson	120	480	

K26 - Skills and Education Group Awards Level 3 Certificate in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	603/2258/5	Skills and Education Group Awards	29	230	290

K27 - Skills and Education Group Awards Level 3 Diploma in Fabrication and Welding Practice					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K27a	603/2259/7	Skills and Education Group Awards	50	440	500

K28 - City and Guilds Level 3 Diploma in Engineering Construction 2660					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K28a	600/2639/X	City and Guilds	44	496	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Fabrication and Welding - for use by 25 years+ only (see below)**

K1 - K28 provide underpinning knowledge for C1a - C1c and C2a - C2c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete one of the Level 3 NVQ Extended Diplomas. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Fabrication and Welding Engineering may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in

Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the mechanical manufacturing/fabrication and welding sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in a fabrication and welding environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or

equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Fabrication and Welding:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme

Additional employer requirements

(No requirement specified)

Level 3, Pathway 7: Materials Processing and Finishing

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 194 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Materials Processing and Finishing - total minimum pathway credit value = 167 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1126 training hours

- Competence = minimum 432 hours/ minimum 122 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 54 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 322 Hours Year 2 = 322 Hours Year 3 = 322 Hours Year 4 = 160 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering and Pearson BTEC Level 3 Extended Certificate in Engineering (both 360 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 432 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Materials Processing and Finishing

Minimum credit value = 194 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 1003 training hours

- Competence = minimum 309 hours/ minimum 95 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 54 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 287 Hours Year 2 = 287 Hours Year 3 = 287 Hours Year 4 = 142 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 309 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Materials Processing and Finishing

Minimum credit value - 167 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Materials Processing and Finishing

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Process Engineer (Casting)	Responsible for ensuring the process is continually optimised. This will be by defining key process variables, implementing control measures and managing result data to ensure optimum performance is maintained.
Mould and Core Maker (semi-skilled)	Make or form wax or sand cores or moulds used in the production of metal castings in foundries.
Sand Caster	Producing sand moulds using loose and plated patterns. Locating, assembling and setting cores. Closing and securing sand moulds for casting
Die Caster	Press Tool & Mould Design / Modification, 3D Surface Modelling, Die Pattern and Casting Checks, Part Inspections and Quality Confirmations, Project control, Cost tracking, Supplier Support, Production Support and Process Planning.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Materials Processing and Finishing					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9592/1	EAL	122	432	

C2 - *Level 3 NVQ Diploma in Materials Processing and Finishing					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/9795/4	EAL	95	309	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Casting Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	600/1025/3	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1130/9	EAL	78	600	
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	
K4 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8154/8	Pearson	120	720	
K5 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7799/5	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K6 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/0882/9	City & Guilds	54	480	

K7 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/7319/9	Pearson	120	720	

K8 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	601/5801/3	EAL	68	525	

K9 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5802/5	EAL	98	750	

Knowledge qualifications available to this pathway (cont.)

K10 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/7283/3	Pearson	120	720	

K11 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	601/7584/9	Pearson	60	360	

K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	601/7591/6	Pearson	90	540	

K13 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/7583/7	Pearson	120	720	

K15 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/7582/5	Pearson	120	720	

K16 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/7577/1	Pearson	120	720	

K17 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	603/0450/9	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K18 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	603/0564/2	EAL	148	1095	

K19 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	603/0485/6	Pearson	120	480	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Materials Processing and Finishing - for use by 25 years+ only (see below)**

K1 - K19 provide underpinning knowledge for C1a and C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Materials Processing and Finishing may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road,
Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the manufacturing sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in a materials processing and manufacturing environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Materials Processing and Finishing:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 8: Engineering Technical Support

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 191 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Engineering Technical Support - total minimum pathway credit value = 164 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 940 training hours

- Competence = minimum 426 hours/ minimum 150 credits
- Knowledge = minimum 180 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 23 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 269 Hours Year 2 = 269 Hours Year 3 = 269 Hours Year 4 = 133 Hours

Minimum off-the-job training hours = 514 training hours

Knowledge - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment (180 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 426 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Engineering Technical Support

Minimum credit value = 191 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 825 training hours

- Competence = minimum 311 hours/ minimum 123 credits
- Knowledge = minimum 180 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 23 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 236 Hours Year 2 = 236 Hours Year 3 = 236 Hours Year 4 = 117 Hours

Minimum off-the-job training hours = 514 training hours

Minimum on-the-job training hours = 311 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Engineering Technical Support

Minimum credit value - 164 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Engineering Technical Support

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
CAD Draught-person	Work in engineering, using computer aided design (CAD) systems to draw overall designs or detailed technical drawings. They normally work in a team with others and engineering designers, with each of them working on part of the project.
Measurement and Control Technician	Work with instruments that monitor production processes and equipment, in industries such as manufacturing, and engineering.
Quality Control Inspector	A skilled, time served individual with extensive experience of mechanical, electrical or electronic inspection techniques and processes
Technical Support Engineer	Provides support for all areas of the technical support function including communications software, test tools, performance, capacity planning, and e-commerce technology as required. Works as team member to develop, design and implement technical support systems or to complete specialist functions
Metrology Inspector	Carry out calibration of manufacturing instruments/gauges and measurement devices in controlled temperature environments to ensure they are accurately calibrated to required standards

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Engineering Technical Support					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9794/2	EAL	150	426	
C1b	601/0082/5	City & Guilds	150	426	
C1c	601/4320/4	ETC Awards Ltd	150	426	

C2 - *Level 3 NVQ Diploma in Engineering Technical Support					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/2085/4	City & Guilds	123	311	
C2b	600/9793/0	EAL	123	311	
C2c	601/1821/0	ETC Awards Ltd	123	311	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	
K2 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	600/0882/9	City & Guilds	54	480	
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	
K4 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8154/8	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K5 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7319/9	Pearson	120	720	

K6 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/7799/5	Pearson	120	720	

K7 - Pearson BTEC Level 3 Diploma in Construction and the Built Environment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/7137/3	Pearson	120	720	

K8 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8098/2	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K9 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/7283/3	Pearson	120	720	

K10 - EAL Level 3 Diploma in Mechanical Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	501/1155/3	EAL	78	600	

K11 - EAL Level 3 Diploma in Maintenance Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	501/1112/7	EAL	78	600	

K12 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	500/7315/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K13 - EAL Level 3 Certificate in Engineering Maintenance on Military Vehicles and Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	600/2119/6	EAL	23	180	

K14 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	500/8165/2	Pearson	180	1080	

K15 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	500/7296/1	Pearson	180	1080	

K16 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	600/1972/4	City & Guilds	79	645	

Knowledge qualifications available to this pathway (cont.)

K17 - City & Guilds Level 3 Diploma in Aircraft Maintenance (Military Aircraft Electrical and Avionics)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	600/1971/2	City & Guilds	72	575	

K18 - Pearson BTEC Level 3 Diploma in Business					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	500/6747/3	Pearson	120	720	

K19 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	500/8097/0	Pearson	180	1080	

K20 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	500/7800/8	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K21 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	501/1121/8	EAL	78	600	
K22 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	601/5800/1	EAL	28	225	
K23 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	601/5799/9	EAL	48	375	
K24 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K25 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	601/5802/5	EAL	98	750	
K26 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	601/7584/9	Pearson	60	360	
K27 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K27a	601/7591/6	Pearson	90	540	
K28 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K28a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K29 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K29a	601/7579/5	Pearson	120	720	

K30 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K30a	601/7583/7	Pearson	120	720	

K31 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K31a	601/7582/5	Pearson	120	720	

K32 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K32a	601/7577/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K33 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K33a	601/7588/6	Pearson	180	1080	

K34 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K34a	601/7587/4	Pearson	180	1080	

K35 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K35a	601/7590/4	Pearson	180	1080	

K36 - Pearson BTEC Level 3 Extended Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K36a	601/7589/8	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K37 - Pearson BTEC Level 3 Extended Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K37a	601/7585/0	Pearson	180	1080	

K38 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K38a	603/0450/9	Pearson	120	480	

K39 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K39a	603/0564/2	EAL	148	1095	

K40 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K40a	603/0485/6	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K41 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K41a	N/A	University of South Wales	N/A	N/A	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Engineering Technical Support - for use by 25 years+ only (see below)**

K1 - K41 provide underpinning knowledge for C1a - C1c and C2a - C2c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete one of the Level 3 NVQ Extended Diplomas. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Engineering Technical Support may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Engineering Technical Support:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 9: Electrical and Electronic Engineering

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 163 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Electrical and Electronic Engineering - total minimum pathway credit value = 136 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 945 training hours

- Competence = minimum 425 hours/ minimum 117 credits
- Knowledge = minimum 186 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 270 Hours Year 2 = 270 Hours Year 3 = 270 Hours Year 4 = 135 Hours

Minimum off-the-job training hours = 520 training hours

Knowledge - EAL Level 3 Certificate in Robotics and Automation (186 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 425 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Electrical and Electronic Engineering

Minimum credit value = 163 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 822 training hours

- Competence = minimum 302 hours/ minimum 90 credits
- Knowledge = minimum 186 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 235 Hours Year 2 = 235 Hours Year 3 = 235 Hours Year 4 = 117 Hours

Minimum off-the-job training hours = 520 training hours

Minimum on-the-job training hours = 302 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Electrical and Electronic Engineering

Minimum credit value - 136 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Electrical and Electronics Engineering

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Industrial Electrician	Install, inspect and test electrical equipment, wiring systems and components in factories and plants
Electrical Engineering Technician	Build; install; operate; and maintain electrical equipment such as generators, motors and transformers that produce and distribute electrical power. The work may include repairing electrical equipment, testing it and restoring it to full operation
Electrical Design Engineer	Design, manufacture and testing of electrical components, control systems, wiring layouts to meet customers needs
Measurement and Control Technician	Install, run, test and look after the instruments that monitor and control manufacturing processes, using sophisticated sensors and control systems to make sure products are measured, weighed, sorted and packaged correctly and efficiently.
Test Technician	Test, fault find and replace or repair components in electronic products or systems. They may also test prototype electrical / electronic products and analyse the results
Electronics Technician	Involved in designing, developing and manufacturing the electronic components of items such as telecommunications equipment; televisions; computers; mobile phones; hospital diagnostic and monitoring equipment.
Electronics Assembly Technician	Assembly of electronic components into sub assemblies and whole units for telecommunications equipment, televisions, computers, hospital diagnostic equipment and control systems used in satellite tracking devices.
Electronics Manufacture Inspector	Use of non invasive inspection techniques such as flying probe test, X-Ray, AOI, endoscope, and other inspection facilities to ensure production quality is maintained
Electronics Manufacture Technician	Circuit board assembly (PCB assembly), surface mount assembly, and conventional electronics assembly

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/9931/8	EAL	117	425	
C1b	601/2602/4	Pearson	117	425	
C1c	601/4307/1	ETC Awards Ltd	117	425	

C2 - *Level 3 NVQ Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/9590/8	EAL	90	302	
C2b	601/2587/1	Pearson	90	302	
C2c	601/1661/4	ETC Awards Ltd	90	302	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1121/8	EAL	78	600	
K2 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1130/9	EAL	78	600	
K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	
K4 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8154/8	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K5 - Pearson BTEC Level 3 Diploma in Electrical Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/8098/2	Pearson	120	720	

K6 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/0882/9	City & Guilds	54	480	

K7 - Pearson BTEC Level 3 Diploma in ICT Systems and Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	501/1435/9	Pearson	37	230	

K8 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8097/0	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K9 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/8165/2	Pearson	180	1080	

K10 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/7319/9	Pearson	120	720	

K11 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	601/5800/1	EAL	28	225	

K12 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	601/5799/9	EAL	48	375	

Knowledge qualifications available to this pathway (cont.)

K13 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	601/5801/3	EAL	68	525	
K14 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/5802/5	EAL	98	750	
K15 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/7584/9	Pearson	60	360	
K16 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/7591/6	Pearson	90	540	

Knowledge qualifications available to this pathway (cont.)

K17 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/7580/1	Pearson	120	720	

K18 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/7579/5	Pearson	120	720	

K19 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/7583/7	Pearson	120	720	

K20 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/7588/6	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K21 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	601/7587/4	Pearson	180	1080	
K22 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	603/0450/9	Pearson	120	480	
K23 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	603/0564/2	EAL	148	1095	
K24 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	603/0485/6	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K25 - EAL Level 3 Certificate in Robotics and Automation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	603/2296/2	EAL	13	186	

K26 - HND Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	N/A	University of Wales (Trinity St Davids)	240	960	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Electrical and Electronic Engineering - for use by 25 years+ only (see below)**

K1 - K26 provide underpinning knowledge for C1a - C2c and C2a - C2c

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Electrical and Electronic Engineering may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the electrical or electronic sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an electrical or electronic engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Electrical and Electronic Engineering:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 10: Installation and Commissioning

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 240 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Installation and Commissioning - total minimum pathway credit value = 213 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1119 training hours

- Competence = minimum 425 hours/ minimum 176 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 46 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 320 Hours Year 2 = 320 Hours Year 3 = 320 Hours Year 4 = 159 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering and Pearson BTEC Level 3 Extended Certificate in Engineering (both 360 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 425 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Installation and Commissioning

Minimum credit value = 240 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 996 training hours

- Competence = minimum 302 hours/ minimum 149 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 46 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 285 Hours Year 2 = 285 Hours Year 3 = 285 Hours Year 4 = 141 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 302 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Installation and Commissioning

Minimum credit value = 213 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Installation and Commissioning

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Installation and Commissioning Technician (Heavy plant equipment)	Installation and commissioning of heavy engineering equipment such as turbine generators; gas compressors; process equipment; chemical reactors and pressure vessels.
Installation and Commissioning Technician (Light equipment)	Installation of engineering equipment and systems: electrical; electronic; mechanical; fluid power pneumatic for conveyors, manufacturing lines, lifts and escalators

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Installation and Commissioning					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1650/4	EAL	176	425	

C2 - *Level 3 NVQ Diploma in Installation and Commissioning					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	501/0733/1	EAL	149	302	
C2b	501/0747/1	Pearson	149	302	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7841/0	Pearson	60	360	

K3 - City & Guilds Level 3 Diploma in Marine Construction, Systems Engineering and Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	600/2306/5	City & Guilds	49	450	

K4 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8154/8	Pearson	120	720	

K5 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/0882/9	City & Guilds	58	480	

Knowledge qualifications available to this pathway (cont.)

K6 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/7315/1	Pearson	120	720	

K7 - EAL Level 3 Diploma in Electrical and Electronic Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	501/1121/8	EAL	78	600	

K8 - Pearson Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8098/2	Pearson	120	720	

K9 - City & Guilds Level 3 Diploma in Engineering - Military Vehicles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	600/4204/7	City & Guilds	68	573	

Knowledge qualifications available to this pathway (cont.)

K10 - City & Guilds Level 3 Diploma in Engineering - Armourers					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	600/4203/5	City & Guilds	46	403	

K11 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	500/7283/3	Pearson	120	720	

K12 - Pearson BTEC Level 3 Extended Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	500/8097/0	Pearson	180	1080	

K13 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	500/8165/2	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	500/7319/9	Pearson	120	720	

K15 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/5799/9	EAL	48	375	

K16 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/5801/3	EAL	68	525	

K17 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/7584/9	Pearson	60	360	

Knowledge qualifications available to this pathway (cont.)

K18 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/7591/6	Pearson	90	540	
K19 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/7580/1	Pearson	120	720	
K20 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/7579/5	Pearson	120	720	
K21 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	601/7583/7	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K22 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	601/7582/5	Pearson	120	720	

K23 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	601/7588/6	Pearson	180	1080	

K24 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	603/0450/9	Pearson	120	480	

K25 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	603/0564/2	EAL	148	1095	

Knowledge qualifications available to this pathway (cont.)

K26 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	603/0485/6	Pearson	120	480	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Installation and Commissioning - for use by 25 years+ only (see below)**

K1 - K29 provide underpinning knowledge for C1a and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** Level 3 NVQ Diploma in Installation and Commissioning may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific

NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an installation and commissioning environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Installation and Commissioning:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 11: Engineering Toolmaking

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 204 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Engineering Toolmaking - total minimum pathway credit value = 177 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1133 training hours

- Competence = minimum 439 hours/ minimum 132 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 54 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 324 Hours Year 2 = 324 Hours Year 3 = 324 Hours Year 4 = 161 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering and Pearson BTEC Level 3 Extended Certificate in Engineering (both 360 training hours) plus 334 additional training hours for Essential Skills Wales, ERR and Mentoring

Minimum on-the-job training hours = 439 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Engineering Toolmaking

Minimum credit value = 204 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 1010 training hours

- Competence = minimum 316 hours/ minimum 105 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 54 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 289 Hours Year 2 = 289 Hours Year 3 = 289 Hours Year 4 = 143 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 316 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Engineering Toolmaking

Minimum credit value = 177 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Engineering Toolmaking

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Toolmaker (Manufacture)	Manufacture and maintenance of tools, jigs; dies; fixtures and moulds used in manufacturing, using a wide variety of machining, welding and hand finishing techniques.
Toolmaker (Research and development)	Manufacture of prototype components for new product development using a wide variety of machining, welding and hand finishing techniques.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Engineering Toolmaking					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1667/X	EAL	132	439	
C1b	601/4484/1	ETC Awards Ltd	132	439	

C2 - *Level 3 NVQ Diploma in Engineering Toolmaking					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/1029/0	EAL	105	316	
C2b	600/3427/0	ETC Awards Ltd	105	316	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - EAL Level 3 Diploma in Mechanical Engineering Technology (Progressive)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	501/1422/0	EAL	97	750	

K3 - EAL Level 3 Diploma in Mechanical Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	501/1155/3	EAL	78	600	

K4 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/7841/0	Pearson	60	360	

K5 - City & Guilds Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/0882/9	City & Guilds	54	480	

Knowledge qualifications available to this pathway (cont.)

K6 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/7283/3	Pearson	120	720	

K7 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/7319/9	Pearson	120	720	

K8 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8154/8	Pearson	120	720	

K9 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	500/8165/2	Pearson	180	1080	

Knowledge qualifications available to this pathway (cont.)

K10 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	500/7315/1	Pearson	120	720	
K11 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	500/7296/1	Pearson	180	1080	
K12 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	601/5801/3	EAL	68	525	
K13 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	601/5802/5	EAL	98	750	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/7584/9	Pearson	60	360	

K15 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/7591/6	Pearson	90	540	

K16 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/7580/1	Pearson	120	720	

K17 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/7583/7	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K18 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/7582/5	Pearson	120	720	

K19 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/7588/6	Pearson	180	1080	

K20 - Pearson BTEC Level 3 Extended Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/7590/4	Pearson	180	1080	

K21 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	603/0450/9	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K22 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	603/0564/2	EAL	148	1095	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Engineering Toolmaking - for use by 25 years+ only (see below)**

K1 - K22 provide underpinning knowledge for C1a - C1b and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Engineering Toolmaking may be used by adult apprentices 25 yrs old and over only, who must:

- a) have received appropriate health and safety training relevant to the work area/environment that they will be working in
- and**
- b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths, and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Engineering Toolmaking:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 12: Automotive

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 189 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Automotive Engineering - total minimum pathway credit value = 162 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 991 training hours

- Competence = minimum 432 hours/ minimum 143 credits
- Knowledge = minimum 225 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 283 Hours Year 2 = 283 Hours Year 3 = 283 Hours Year 4 = 142 Hours

Minimum off-the-job training hours = 559 training hours

Knowledge - EAL Level 3 Certificate in Engineering Technology (225 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 432 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Automotive Engineering

Minimum credit value = 189 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 868 training hours

- Competence = minimum 309 hours/ minimum 116 credits
- Knowledge = minimum 225 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 28 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 248 Hours Year 2 = 248 Hours Year 3 = 248 Hours Year 4 = 124 Hours

Minimum off-the-job training hours = 559 training hours

Minimum on-the-job training hours = 309 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Automotive Engineering

Minimum credit value = 162 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Automotive Engineering

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Vehicle Test Technician	Testing of mechanical; electrical; electronic; navigation; in-vehicle entertainment and safety systems under varying conditions and environments
Motorsport Technician (Mechanical)	Removal and refitting of motorsports engines, transmissions; suspension; steering; brakes; fuel systems and other components both at the factory and trackside during competition
Motorsport Technician (Electrical / Electronic)	Removal and refitting of electrical/ electronic equipment on motorsport vehicles, carrying out electrical / electronic fault diagnosis on competition and experimental vehicles
Vehicle Builder (Commercial and passenger carrying vehicles)	Manufacture, repair and refurbish commercial and passenger carrying vehicles by building and repairing bespoke vehicle bodies from the chassis upwards
Vehicle Development Technician	Assemble body sub-assemblies using a variety of joining techniques to produce an experimental vehicle, disassemble and modify after testing

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Automotive Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1784/3	EAL	143	432	
C1b	601/4486/5	ETC Awards Ltd	143	432	

C2 - *Level 3 NVQ Diploma in Automotive Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/0750/3	EAL	116	309	
C2b	601/4492/0	ETC Awards Ltd	116	309	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7319/9	Pearson	120	720	

K3 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/7841/0	Pearson	60	360	

K4 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/8154/8	Pearson	120	720	

K5 - Pearson BTEC Level 3 Diploma in Operations and Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7315/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K6 - IMI Level 3 Diploma in Motorsport Vehicle Maintenance and Repair					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	600/2579/7	IMI	69	538	
K7 - IMI Level 3 Extended Diploma in Motorsport Vehicle Maintenance and Repair					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	600/2760/5	IMI	90	646	
K8 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8098/2	Pearson	120	720	
K9 - Pearson BTEC Level 3 Subsidiary Diploma in Vehicle Technology (Motorsport)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	600/4344/1	Pearson	60	360	

Knowledge qualifications available to this pathway (cont.)

K10 - Pearson BTEC Level 3 Diploma in Vehicle Technology (Motorsport)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	600/4343/X	Pearson	120	720	
K11 - Pearson BTEC Level 3 Extended Diploma in Vehicle Technology (Motorsport)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	600/4328/3	Pearson	180	1080	
K12 - IMI Level 3 Diploma in Heavy Vehicle Maintenance and Repair Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	500/9812/3	IMI	79	670	
K13 - Pearson BTEC Level 3 90-credit Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	600/3888/3	Pearson	90	540	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	500/8165/2	Pearson	180	1080	
K15 - EAL Level 3 Certificate in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/5800/1	EAL	28	225	
K16 - EAL Level 3 Subsidiary Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/5799/9	EAL	48	375	
K17 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K18 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	601/5802/5	EAL	98	750	
K19 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	601/7584/9	Pearson	60	360	
K20 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	601/7591/6	Pearson	90	540	
K21 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K21a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K22 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K22a	601/7579/5	Pearson	120	720	

K23 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K23a	601/7582/5	Pearson	120	720	

K24 - Pearson BTEC Level 3 Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K24a	601/7588/6	Pearson	180	1080	

K25 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K25a	603/0450/9	Pearson	120	480	

Knowledge qualifications available to this pathway (cont.)

K26 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K26a	603/0564/2	EAL	148	1095	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Automotive Engineering - for use by 25 years+ only (see below)**

K1 - K26 provide underpinning knowledge for C1a - C1b and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Automotive Engineering may be used by adult apprentices 25 yrs old and over only, who must:

- a) have received appropriate health and safety training relevant to the work area/environment that they will be working in
- and**
- b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road,
Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths, and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the automotive sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an automotive engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to

become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Automotive Engineering:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

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

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 13: Engineering Woodworking, Pattern and Modelmaking

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 211 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Engineering Woodworking, Pattern and Modelmaking - total minimum pathway credit value = 184 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1126 training hours

- Competence = minimum 432 hours/ minimum 133 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 60 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 322 Hours Year 2 = 322 Hours Year 3 = 322 Hours Year 4 = 160 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering and Pearson BTEC Level 3 Extended Certificate in Engineering (both 360 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 432 training hours and is evidenced by completion of the Level 3 Extended Diploma in Engineering Woodworking, Pattern and Model Making

Minimum credit value = 211 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 1003 training hours

- Competence = minimum 309 hours/ minimum 106 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 60 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 287 Hours Year 2 = 287 Hours Year 3 = 287 Hours Year 4 = 142 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 309 training hours and is evidenced by completion of the Level 3 Diploma in Engineering Woodworking, Pattern and Model Making

Minimum credit value = 184 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Engineering Woodworking, Pattern and Modelmaking

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Engineering Woodworker	Producing pattern, core-box or model components using wood-working machines.
Engineering Modelmaker	Produce concept engineering prototype models, architectural models, planning models, plastic fabrications and visual displays in a range of materials.
CNC Wood Machinist	Produce pattern, Corebox or model components using CNC machines

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 Extended Diploma in Engineering Woodworking, Pattern and Model Making					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/1769/7	EAL	133	432	

C2 - *Level 3 NVQ Diploma in Engineering Woodworking, Pattern and Model Making					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/0746/1	EAL	106	309	
C2b	600/0716/3	Pearson	106	309	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7841/0	Pearson	60	360	
K3 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/8154/8	Pearson	120	720	
K4 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/7319/9	Pearson	120	720	
K5 - EAL Level 3 Diploma in Casting Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	600/1025/3	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K6 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	601/5801/3	EAL	68	525	

K7 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	601/5802/5	EAL	98	750	

K8 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	601/7584/9	Pearson	60	360	

K9 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/7591/6	Pearson	90	540	

Knowledge qualifications available to this pathway (cont.)

K10 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	601/7580/1	Pearson	120	720	

K11 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	601/7582/5	Pearson	120	720	

K12 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	603/0450/9	Pearson	120	480	

K13 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	603/0564/2	EAL	148	1095	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Engineering Woodworking, Pattern and Model Making - for use by 25 years+ only (see below)**

K1 - K13 provide underpinning knowledge for C1a and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at craft and technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete one of the Level 3 NVQ Extended Diploma's. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Engineering Woodworking, Pattern and Model Making may be used by adult apprentices 25 yrs old and over only, who must:

- a) have received appropriate health and safety training relevant to the work area/environment that they will be working in
- and**
- b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in

Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road, Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths, and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering/model-making sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an engineering woodworking/pattern/ model making environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Engineering Woodworking, Pattern and Modelmaking:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

Level 3, Pathway 14: Engineering Leadership

Description of this pathway

Pathway duration approximately 42 months depending on the qualification and unit options selected

Total minimum credit value (made up of the total on- and off-the-job training for all the components) = 206 credits

(For adult apprentices 25 years and over only completing Level 3 NVQ Diploma in Engineering Leadership - total minimum pathway credit value = 179 credits)

Level 3 NVQ Extended Diploma

Pathway with minimum total learning hours = 1124 training hours

- Competence = minimum 430 hours/ minimum 128 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 60 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 321 Hours Year 2 = 321 Hours Year 3 = 321 Hours Year 4 = 161 Hours

Minimum off-the-job training hours = 694 training hours

Knowledge - Pearson BTEC Level 3 Subsidiary Diploma in Engineering (360 training hours) plus 334 additional training hours for Essential Skills and Mentoring

Minimum on-the-job training hours = 430 training hours and is evidenced by completion of the Level 3 NVQ Extended Diploma in Engineering Leadership

Minimum credit value = 206 credits

Level 3 NVQ Diploma - Only for adults 25 years and over

Pathway with minimum total learning hours = 1001 training hours

- Competence = minimum 307 hours/ minimum 101 credits
- Knowledge = minimum 360 hours (based on the smallest technical certificate training hours)
- Knowledge = minimum 60 credits (based on the smallest technical certificate credit)
- Essential Skills (notional value 60 hours x 3) = 180 hours /18 credits
- Mentoring 154 weeks x 1 hour/week = 154 hours

Year 1 = 286 Hours Year 2 = 286 Hours Year 3 = 286 Hours Year 4 = 143 Hours

Minimum off-the-job training hours = 694 training hours

Minimum on-the-job training hours = 307 training hours and is evidenced by completion of the Level 3 NVQ Diploma in Engineering Leadership

Minimum credit value = 179 credits

As an option, adult apprentices 25 years and over can complete the Level 3 NVQ Extended Diploma in Engineering Leadership

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements to the general framework entry requirements

Job title(s)	Job role(s)
Project Leader (Engineering)	Produce specifications, research, create and evaluate engineering designs, managing resources, scheduling and monitoring project activities using proprietary project management packages
Project Manager (Engineering)	Planning, organizing, securing and managing resources to bring about the successful completion of specific project goals and objectives.
Product Support Engineer	Deal with customers technical enquiries, evaluate production issues and provide engineering solutions, document engineering improvements and introduce to production.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Extended Diploma in Engineering Leadership					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C1a	600/2245/0	EAL	128	430	

C2 - *Level 3 NVQ Diploma in Engineering Leadership					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total Qualification Time
C2a	600/1030/7	EAL	101	307	
C2b	600/0278/5	Pearson	101	307	

Knowledge qualifications available to this pathway

K1 - EAL Level 3 Diploma in Engineering Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K1a	501/1130/9	EAL	78	600	

Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 3 Subsidiary Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K2a	500/7841/0	Pearson	60	360	

K3 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K3a	500/8154/8	Pearson	120	720	

K4 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K4a	500/7283/3	Pearson	120	720	

K5 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K5a	500/7799/5	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K6 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K6a	500/7319/9	Pearson	120	720	
K7 - Pearson BTEC Level 3 Diploma in Construction and the Built Environment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K7a	500/7137/3	Pearson	120	720	
K8 - Pearson BTEC Level 3 Diploma in Electrical / Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K8a	500/8098/2	Pearson	120	720	
K9 - EAL Level 3 Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K9a	601/5801/3	EAL	68	525	

Knowledge qualifications available to this pathway (cont.)

K10 - EAL Level 3 Extended Diploma in Engineering Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K10a	601/5802/5	EAL	98	750	
K11 - Pearson BTEC Level 3 Extended Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K11a	601/7584/9	Pearson	60	360	
K12 - Pearson BTEC Level 3 Foundation Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K12a	601/7591/6	Pearson	90	540	
K13 - Pearson BTEC Level 3 Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K13a	601/7580/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 3 Diploma in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K14a	601/7579/5	Pearson	120	720	

K15 - Pearson BTEC Level 3 Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K15a	601/7583/7	Pearson	120	720	

K16 - Pearson BTEC Level 3 Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K16a	601/7582/5	Pearson	120	720	

K17 - Pearson BTEC Level 3 Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K17a	601/7577/1	Pearson	120	720	

Knowledge qualifications available to this pathway (cont.)

K18 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K18a	603/0450/9	Pearson	120	480	

K19 - EAL Level 3 Technical Extended Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K19a	603/0564/2	EAL	148	1095	

K20 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	Total qualification time
K20a	603/0485/6	Pearson	120	480	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

***Level 3 NVQ Diploma in Engineering Leadership - for use by 25 years+ only (see below)**

K1 - K20 provide underpinning knowledge for C1a and C2a - C2b

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles to equip apprentices with the understanding required to operate effectively and efficiently at technician level within this sub-sector.

Employers have agreed that their apprentices should have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in the engineering sector, including a broad range of mathematical, scientific and engineering/manufacturing principles and processes.

Apprentices must complete the Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway) then they will be able to accredit these against the requirements of the Extended Level 3 Diploma. In such circumstances this would result in the minimum training hours requirement for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

Delivery methods for knowledge based qualifications may vary widely, from a conventional college based environment, to delivery through a combination of this and written/web-based/distance learning materials.

***Note:** The Level 3 NVQ Diploma in Engineering Leadership may be used by adult apprentices 25 yrs old and over only, who must:

a) have received appropriate health and safety training relevant to the work area/environment that they will be working in

and

b) have worked in an engineering or manufacturing environment and have skills knowledge and understanding broadly comparable to relevant practical NVQ Level 2 units detailed in Performing Engineering Operations, Performing Manufacturing Operations or other skill specific NVQ Level 2 in engineering or manufacturing.

The above must be evidenced by a signed letter from the Apprentices Company and sent prior to the commencement of training to:

Standards and Frameworks Manager, Semta, Unit 2 The Orient Centre, Greycaine Road,
Watford WD24 7GP or frameworks@semta.org.uk

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	2
Application of numbers	2
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway

Entrants to this pathway are likely to primarily be school leavers who have completed their GCSE or Welsh Baccalaureate studies, and in some cases relevant vocational activity such as a Pre-Apprenticeship programme or extended work experience.

More specifically they may:

- have GCSEs in English, Maths, and Science at grade C/new equivalent grade 4 or above or
- have a Welsh Baccalaureate or
- have A or AS levels in Science, Technology, Engineering or Mathematics subjects or
- have completed a Foundation Engineering Apprenticeship (preferably in Engineering Manufacture or Improving Operational Performance) or
- have completed an Enhanced Engineering Programme (formerly Pathways to Apprenticeship programme) or
- have previous work experience or employment in the engineering sector or
- have completed a 14 to 19 Diploma in Engineering or Manufacturing or
- have completed a Young Apprenticeship in Engineering or other related area or
- be willing to undertake a course of training both on-the-job and off-the-job and apply this learning in the workplace
- be keen and motivated to work in an engineering environment

Note: Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge qualification should already have achieved a Technical Certificate at Level 3, A Levels or equivalent in the relevant subject area and meet the entry specification of the qualification.

Other entrants may have experience from working in the sector, and are now seeking to become qualified by undertaking an apprenticeship programme. Particular interest would be shown to those applicants who have had previous work experience or employment in the sector.

Progression from this pathway for those who complete an Apprenticeship in Engineering Manufacture - Engineering Leadership:

While significant numbers of young people will seek internal progression to team leader or supervisory roles within their companies, some will want to progress to a Higher Apprenticeship in Engineering; others may decide to opt for a Foundation degree or HNC/HND.

More generally, most ex-apprentices aspire to a combination of internal promotion while at the same time undertaking company sponsored qualifications as specified above.

To further assist apprentices plan their careers we recommend they visit the following websites:

<http://www.apprenticeships.org.uk/be-an-apprentice/the-benefits.aspx>

nationalcareersservice.direct.gov.uk/advice/planning/job_family/Pages/manufactureandengineering.aspx

UCAS points for this pathway:

(No requirement specified)

Employee rights and responsibilities

Employee Rights and Responsibilities (ERR) is no longer compulsory, but Semta recommends that all apprentices (especially the 16 years -18 years group) receive it as part of their induction.

There are two methods of achieving ERR as set out below

Method 1 - Qualifications

City & Guilds have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements.

Qualification details:

City & Guilds Level 2 Subsidiary Award in Employment and Personal Learning at Work

600/2819/1

Credit value: 2 credits

Training hours: 15

Please note: Although it may be possible to complete ERR in a minimum of 15 training hours, Semta recommend a minimum of 40 training hours are taken to complete the ERR requirements.

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2 - Workbook

Semta has produced an Apprentice ERR workbook that is available from:

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered. The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

***Please note:** All apprentices must receive a company induction programme.

Additional employer requirements

(No requirement specified)

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

Semta recognises the training and business benefits of having apprentices from a wide variety of diverse backgrounds. We are committed to ensuring equality and diversity drives all aspects of apprentice selection and recruitment. Equal opportunity and diversity refers to the active elimination of unlawful or unfair discrimination against any person or group on the grounds of gender, race, colour, nationality, ethnic origin, religion, age, sexual orientation, marriage and civil partnership, pregnancy and maternity, political belief, disability and where appropriate, prison/offender background where this is deemed irrelevant.

Despite the encouraging numbers of both female participants and ethnic minorities on the 14 to 19 Engineering and Manufacturing Diplomas and Young Apprenticeship programmes, the Engineering sector still has a significant way to go to encourage women into engineering and manufacturing careers.

Semta wishes to make a Gender Equality Commitment. Semta has signed the United Kingdom Resource Centre (UKRC) CEO's charter in a bid to step up female recruitment in its key sectors and programmes. Due to impending skills gaps it is estimated that 187,000 people will be required to be recruited and trained between 2010-2016 within Semta's sectors of aerospace, automotive, composites, electrical, electronics, maintenance, marine, mathematics, metals and engineered metal products, renewables and science.

The UKRC is the Government's leading body for advanced gender equality in science, engineering and technology (SET) and the CEO's charter is a formal commitment to the UKRC's agenda to challenge the under-representation of women in SET. Women make up 50% of the labour market, yet they make up less than 20% of the labour market in science, engineering and technology.

The UKRC believes that only a concerted effort by the SET industry will break down the gender barriers that exist in traditionally male-dominated environments and we want to be part of a new consensus which will create an inclusive working environment for women. The manufacturing industries in which this framework operates are traditionally dominated by a white, male workforce. However, faced with an aging workforce and the probability of skill shortages we must look to attract new entrants from a much more diverse recruitment pool. This means that all young people and adults considering engineering and manufacturing as a career are welcome.

Providers of apprenticeship training, including employers, must be able to demonstrate there are no overt or covert discriminatory practices in the selection and employment of apprentices. This can be demonstrated by implementing a Single Equality Scheme (SES). The new Equality

Duty (part of the Single Equality Bill) introduced to the public sector requires all public sector bodies to produce a SES combining their current race, disability and gender schemes and should be recognised by all providers of apprenticeship training. The implementation of a SES demonstrates the organisation's commitment to equality and diversity by identifying new and improved ways of working to ensure the organisation is more efficient and effective in meeting the diverse needs of both staff and customers.

All those who recruit apprentices, be they colleges, training providers or employers, must comply with the Equality act of 2010 and apply the Equality and Diversity legislation taking full account of the following:

- The Sex Discrimination Act 1975 and Code of Practice
- The Race Relations Act 1976 and Code of Practice
- The Disability Discrimination Act 1995 and Code of Practice
- Employment Equality (Religion or Belief) Regulations 2003
- Employment Equality (Sexual Orientation) Regulations 2003
- Employment Equality (Age) Regulations 2006
- The Equality Act 2010

Providers of apprenticeship training and employers must also actively monitor equality of opportunity and diversity procedures and take positive action where necessary to ensure equal access and treatment for all. Apprenticeships must be seen as a vital route to encourage and facilitate long term change in the equality and diversity of the engineering industry, therefore entry conditions into this framework are extremely flexible. All effort should be made to increase the diversity of our apprentice population.

Download the guidance on the Equality Act here:

www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/

On and off the job training (Wales)

Summary of on- and off-the-job training

For both the Foundation Apprenticeship and Apprenticeship in Engineering Manufacture the hours outlined in each section may vary depending on previous experience and attainment of the apprentice. Where a learner enters an apprenticeship agreement having previously attained or acquired some or all of the appropriate competence or knowledge, this prior learning needs to be recognised and documented using the relevant credit transfer, exemption or Recognition of Prior Learning (RPL) procedures.

The amount of 'on-the-job' training required to complete the apprenticeship under the apprenticeship agreement may then be reduced accordingly, provided the total numbers of 'on-the-job' hours for this framework can be verified for apprenticeship certification. Those apprentices who commence training under a new apprenticeship agreement with a new employer may bring a range of prior experience with them. When an apprentice can claim 5% or more hours towards the 'on-the-job' framework total through prior learning acquired from previous full-time education, employment or other vocational programme, then the apprentices' learning programme should include 'customisation'.

Training providers and colleges are encouraged to identify additional 'on-the-job' training programmes that customise the learning to the new workplace. Customisation programmes may include selecting appropriate additional Unit(s) from qualifications, or relevant units recognised as Quality Assured Lifelong Learning (QALL) through a CQFW recognised body, or follow Essential Skills at a level higher than that specified in the framework, or other competency-based qualifications/units relevant to the workplace.

Note

The Engineering Manufacture framework primarily addresses the training needs of apprentices involved in engineering manufacturing. In many cases this means those who work in an engineering manufacturing environment. Having discussed the requirement for Essential Skills it was felt that all three qualifications would be required.

For an apprentice who has already achieved the relevant qualification, they must have been certificated within 5 years from the date of application for the Foundation Apprenticeship/ Apprenticeship Certificate.

Any off-the-job training undertaken before the apprentice started may count towards the off-the-job training required for the apprenticeship if it was undertaken in relation to an

accredited qualification contained in the framework for which an apprenticeship certificate is applied for. Both on and off-the-job training hours need to be planned, reviewed and jointly evaluated between the apprentice, training instructor, tutor or lecturer and workplace supervisor and where relevant the apprentices's mentor. The apprentice should have access to training support at all times, whether on or off-the job training.

On and off-the job training hours should be delivered through a variety of learning methods, individual and group teaching; team-working; e-learning; distance learning; coaching; mentoring; feedback and assessment.

The minimum training hours and credit value for each pathway are summarised in the pathway descriptions.

Evidence requirements for claiming an Apprenticeship Certificate

FISSS (The Federation of Industry Sector Skills & Standards), who were formerly known as The Alliance of Sector Skills Councils, have recently been appointed as the certificating authority for Welsh Apprenticeships. FISSS have developed a new online system called ACW (Apprenticeship Certification Wales) for Welsh Apprenticeship certification which will superseded the paper based system from 2nd September 2013 onwards. This means that all Apprenticeship completion certificates must be claimed via the new ACW online system from this date onwards

If you are a Training Provider claiming an Apprenticeship completion certificate on behalf of an apprentice then you will need to register on ACW for a user name and password before you are able to register apprentices and claim certification.

If you are an apprentice claiming an Apprenticeship completion certificate for yourself then you will need to go to the ACW for an application form.

Off-the-job training

Off-the-job training is defined as time for learning activities away from normal work duties or away from the immediate pressures of the workplace.

The amount of off-the-job training hours required to complete this Foundation Apprenticeship or Apprenticeship framework varies according to each pathway and level of technical certificate selected - however all include a minimum number of training hours for Essential Skills Wales/ Essential Skills Qualifications (ESQ), ERR (if required) and mentoring.

Refer to each pathway description for a summary of the minimum off-the-job training hours.

How this requirement will be met

Off-the-job training needs to:

- achieve clear and specific outcomes which contribute directly to the successful achievement of the framework and this may include accredited and non-accredited elements of the framework
- be planned, reviewed and evaluated jointly between the apprentice and a tutor, teacher, mentor or manager
- allow the apprentice access as, and when required to tutors, teachers, mentor(s) or manager
- be delivered through one or more of the following methods: individual and group teaching, e-learning, distance learning, coaching; mentoring, feedback and assessment; collaborative/networked learning with peers, guided study and induction.

Providers will not be required to record individual on and off-the-job training hours. However for certification purposes, the provider will be required to declare that the apprentice has completed the on and off-the-job training hours requirement as set out in this Apprenticeship framework.

Training hours delivered under an apprenticeship agreement may vary depending on the previous experience and attainment of the apprentice. The amount of off-the-job training required to complete the apprenticeship under the apprenticeship agreement may then be reduced accordingly, provided the total number of off-the-job hours for this framework can be verified for apprenticeship certification.

It is recommended that a mentor is appointed for each apprentice to review their progress on a regular basis. It is estimated that a mentor will have up to two hours per week contact time with each apprentice. This activity will take place off-the-job but is inclusive within the off-the-job hours quoted in the previous section.

Apprentices aged 16 to 24 years must complete the Level 3 NVQ Extended Diploma which includes a number of Performing Engineering Operations (PEO) Level 2 NVQ units. These units should be delivered and assessed in a sheltered and realistic environment and must be achieved before apprentices complete the Level 3 units in the Extended Diploma on the job in the workplace.

It is recognised that in some instances in the past, the PEO NVQ Level 2 has been delivered on a part-time day-release basis in a sheltered environment with the employer delivering the NVQ Level 3 in parallel for the balance of time each week. There are clear disadvantages to this approach:

- the potential for trainees to work in hazardous environments commensurate with Level 3 activities without having received the Health and Safety tuition at Level 2 that would support this situation

- the potential for the learner not to be trained in a progressive way developing competences and knowledge at Level 2 that progresses seamlessly to Level 3.

If providers and employers wish to continue delivery on this basis, they must ensure that:

- all appropriate Health and Safety units are successfully completed at Level 2 prior to any delivery at Level 3 in the workplace
- any units at Level 3 delivered in the workplace must have been preceded by delivery at Level 2 in a sheltered environment.

Previous attainment

Where an apprentice enters an apprenticeship agreement having previously attained parts or all of the relevant qualifications, this prior learning needs to be recognised using either credit transfer, or through recording of exemptions for certificated learning outside of the, for example Principal Learning qualifications.

For apprentices who have already achieved the relevant qualifications, they must have been certificated within 5 years of applying for the Foundation or Apprenticeship Certificate.

Previous experience

Where an apprentice enters an apprenticeship agreement with previous work-related experience, this prior learning needs to be recognised (see Guidance on Claiming Credit for further details). To count towards apprenticeship certification, previous experience must be recorded using the appropriate Awarding Organisation's 'Recognition of Prior Learning' procedures and the hours recorded may then count towards the off-the-job hours required to complete the apprenticeship.

For apprentices with prior uncertificated learning experience, they must have been continuously employed in the relevant job role in the industry for five years duration.

The Technical Certificate may be delivered either by day or block release or a combination of the two at a local Training Provider or College of FE or delivered on the employers premises (away from the immediate pressures of the workplace). There may also be a need for self study according to the Training Providers, Colleges or Awarding Organisations arrangements.

Essential Skills Wales/ Essential Skills Qualifications (ESQ) delivery methods may vary, however all methods should start with initial/early assessment of a learner's skills, personalised learning should be based on assessing performance to date in order to inform and shape the next step in learning for that individual or group of individuals. Essential Skills Wales/ Essential Skills Qualifications (ESQ) are externally assessed and candidates need to be prepared in order to take the tests, again methods of preparation vary but the preferred method seems to be an intensive off-the-job coaching period where candidates are taught the techniques required to undertake previous test papers to become proficient.

Employee Rights and Responsibilities (ERR) will be delivered (if required) as per the guidance in the ERR section of this framework. It is important that all new apprentices receive a comprehensive induction programme on joining their company and that they are aware of the evidence opportunities this presents to complete significant areas of the ERR requirements.

All three key elements will be delivered by a combination of group-based delivery and self-study. In addition there will be a company induction, and it is recommended that a mentor should be appointed for each apprentice to review their progress on a regular weekly basis. All of these activities will take place off-the-job.

The Technical Certificate, Essential Skills and Employee Rights and Responsibilities (if required) will be formally delivered by the training provider/college staff in accordance with the awarding organisation's delivery and assessment guidance.

Inclusion of Technical Certificates in the Apprenticeship Framework pathway

Working closely with a number of stakeholders including employers and awarding organisations, we have ensured that employers and apprentices have access to a range of technical certificates across a number of awarding organisations.

Whilst Awarding Organisation partners have ensured that each of the technical knowledge qualification in the pathway delivers, via a core and options approach, the minimum knowledge and understanding requirements for all the (job roles) selected in the appropriate NVQ. Employers have also demanded that they and apprentices have access to a number of different technical knowledge qualifications that specify varying degrees of theoretical concepts required in metal processing and manufacturing sectors including maths, scientific and engineering/manufacturing principles.

The different sizes (credit value and hours) of the technical knowledge qualifications reflects the varying degree in the complexity, breadth and depth of the skills, knowledge, understanding and theoretical concepts required in the engineering and manufacturing sectors.

The benefits of this approach for both the employer and apprentices is that they can select the most appropriate qualification that meets the business requirements but also recognises the potential progression opportunities both in company including access to further and higher education and the career aspirations and abilities of the apprentice.

The providers of the technical knowledge qualification in partnership with the apprentice and employer could take the following into account and/or undertake further diagnostic assessments to ensure that the apprentice is enrolled on the most appropriate technical qualification:

- the career aspirations of the apprentice
- the skill and knowledge requirements of the employer for the selected occupational area (job role). The employer may have recruited the apprentice based on a workforce planning tool including succession planning
- an assessment of the academic qualifications achieved by the apprentice prior to undertaking the framework to determine if the apprentice will have the ability to achieve one of the more academically demanding technical knowledge qualifications
- the results of any psychometric tests that would ascertain whether the apprentice will be able to achieve one of the more academically demanding technical knowledge qualifications
- the preferred learning style of the apprentice including the various assessment methodologies used by the different Awarding Organisations Custom and practice within the Sector, including any legislation requirements
- local and/or national Trade Union agreements

Evidence of off-the-job training

The range of evidence requirements are as follows:

- Copy of Awarding Organisation certificates for Communication & Application of Number (Essential Skills Wales) or Key skills at the same level as Essential Skills Wales or Essential Skills Qualifications (ESQ)*
- Copy of the Awarding Organisation certificate for the ERR qualification or completed countersigned ERR workbook (if required)
- Copy of the Awarding Organisation certificate for the knowledge qualification

***Note:**

Apprentices registered on a SASW Apprenticeship on or after 1st January 2016 must complete the required mandatory new Essential Skills Qualifications (ESQ) at Level 1: Essential Communication Skills and Essential Application of Number Skills and Essential Digital Literacy Skills

Apprentices who have enrolled prior to 31st December 2015 can continue to work towards either Key Skills / Essential Skills Wales (AON, Comms, and ICT / Digital Literacy) as required by the framework, which will be accepted within SASW.

For apprentices registered on or after 14th October 2016, recognised proxies for the new ESQ qualifications are accepted - these are listed in the front of this framework document. This includes the Welsh Baccalaureate Qualification (WBQ) with ESQ and GCSE components.

Candidates undertaking the new WBQ will not be required to provide individual certificates as evidence.

Apprenticeship starts before the 14th October 2016 must continue to meet the 2013 SASW requirements for Essential Skills. Essential Skills Wales qualifications achieved in the context of

the Welsh Baccalaureate Qualification (WBQ) can be accepted as long as the specific certification of the title(s) and level(s) of those ESW/ESQ qualifications is provided. The WBQ certificate itself does not provide this specific evidence.

Wider Key Skills are no longer required for this framework.

On-the-job training

Refer to each pathway description for a summary of the minimum on-the-job training hours.

How this requirement will be met

On the job delivery

The units must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Semta's website.

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Engineering NVQ QCF unit assessment strategy which can be downloaded from Semta's website.

On-the-job training hours should:

- achieve clear and specific outcomes which contribute directly to the successful achievement of the framework and this may include accredited and non-accredited elements of the framework
- be planned, reviewed and evaluated jointly between the apprentice and a tutor, teacher, mentor or manager
- allow access as and when required by the apprentice either to a tutor, teacher, mentor or manager
- be delivered during contracted working hours.

Examples of on-the-job training hours in an engineering or manufacturing context might be:

- technical or business awareness
- employability skills
- team working and communications
- task-specific workplace instructions or team briefings
- taught sessions by the workplace line manager/instructor
- induction where activities are covered within normal work duties
- coaching of apprentices.

These hours may vary depending on previous experience and attainment of the apprentice. Where a learner enters an apprenticeship agreement having previously attained or acquired

the appropriate competencies or knowledge, this prior learning needs to be recognised and documented using the relevant credit transfer, exemption or RPL procedures (as off-the-job above).

The amount of on-the-job training required to complete the apprenticeship under the apprenticeship agreement may then be reduced accordingly, provided the total number of on-the-job hours for this framework can be verified for apprenticeship certification.

All apprentices are required to generate evidence in the workplace to demonstrate completion of the competence qualification, this may be through:

- apprentices generating a portfolio to record evidence of unit completion in accordance with the Awarding Organisations requirements and this will be regularly reviewed by the assessor and mentor. A period of one hour per week has been set aside for mentors to review the ongoing progress of their apprentice

or

- apprentices generating portfolio evidence based on jobs undertaken will need to get this signed as having been completed by a responsible work colleague. This is then examined and agreed by the assessor as a contribution to demonstrating competence in the workplace.

Generation of portfolio evidence may be paper based, electronic with other mediums such as video evidence. Evidence may be gathered throughout the whole apprenticeship period.

For the Apprenticeship in Engineering Manufacture, apprentices must complete the relevant Level 3 NVQ Extended Diploma. However if the relevant PEO units have already been achieved and certificated in a previous programme, such as applicants who have completed the Improving Operational Performance Level 2 framework (Performing Engineering Operations Level 2 pathway), then they will be able to accredit these against the requirements of the Level 3 Extended Diploma. In such circumstances this would result in the minimum GLH requirements for the relevant pathway being reduced by a minimum of 123 hours and a minimum value of 27 credits (depending on the PEO units completed).

The Level 3 NVQ Extended Diplomas include a number of Performing Engineering Operations (PEO) Level 2 NVQ units. It is strongly recommended that the PEO units are delivered and assessed off the job in a sheltered and realistic work environment. This will ensure that Apprentices have attained a minimum and safe level of skills, knowledge and understanding in the occupational area prior to entering the workplace, thus minimising the risk of injury to themselves and other employees and the potential of increased costs incurred by the employer such as damaged tools/equipment, scrapped materials and components.

In order to ensure the safe transition to the workplace prior to being exposed to the hazards of

the industrial environment, Apprentices must receive sufficient Health and Safety training covering both general and occupational specific requirements whilst undertaking the selected Level 2 NVQ PEO units off the job and in a sheltered and realistic work environment.

As a minimum the training programme should include the skills, knowledge and understanding requirements set out in the Performing Engineering Operations Level 2 qualification.

Whilst undertaking the skill specific Level 2 NVQ units as part of the Level 3 NVQ Extended Diploma, Training Providers may wish to consider registering Apprentices on the three Mandatory Units from the Level 2 NVQ Diploma in Performing Engineering Operations:

Unit 1: Working Safely in an Engineering Environment. Unit Ref; L/600/5781

Unit 2: Carrying out Engineering Activities Efficiently and Effectively. Unit Ref; D/600/5784

Unit 3: Using and Communicating Technical Information. Unit Ref; M/600/5790

This has the advantage that if for any reason the apprentice is not able to complete the Level 3 NVQ Extended Diploma they would have achieved sufficient units to claim the Level 2 NVQ Diploma in Performing Engineering Operations.

Essential employability skills (Wales)

Essential employability skills

(No requirement specified)

apprenticeship
FRAMEWORKS ONLINE

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