

# apprenticeship FRAMEWORK

## Higher Apprenticeship in Advanced Manufacturing Engineering - Level 4 (England)

### IMPORTANT NOTIFICATION FOR HIGHER APPRENTICESHIP STARTS FROM 1ST AUGUST 2019

Current Apprenticeship funding rules state that those undertaking a Level 3 or Higher Apprenticeship are required to hold, or achieve as part of their Apprenticeship, a Level 2 qualification in both English and Maths. Furthermore, the funding rules state that, to attract government funding, at least 20% of the Apprentices paid hours, over the planned duration of the Apprenticeship training period, must be spent on off-the-job training.

Therefore for any Apprentices starting a Higher Apprenticeship on, or after 01/08/2019, there is a requirement for them to have achieved Level 2 English and Maths and fulfil the 20% off the job training requirement. This is in order to align certification requirements with the funding rules. Apprenticeship certification claims will require the relevant achievement evidence to be uploaded.

### Latest framework version?

Please use this link to see if this is the latest issued version of this framework:

[afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR04450](http://afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR04450)

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## CHANGES TO THE ENGLISH AND MATHS REGULAR MINIMUM REQUIREMENTS FOR APPRENTICESHIP STARTS FROM 21 SEPTEMBER 2018 AND APPRENTICESHIPS REMAINING INCOMPLETE ON 21 SEPTEMBER 2018.

Modifications to SASE came into effect on 21 September 2018. Accordingly, SASE publication DFE-00236-2018 applies both to new Apprenticeship starts from 21 September 2018 and all Apprenticeships commenced before this date and not completed by 21 September 2018.

The SASE modifications have further extended the list of qualifications that meet the minimum English and Maths requirements. This now allows for the acceptance of a wider range of UK-wide qualifications and also certain international qualifications, where these are supported by a suitable NARIC Statement of Comparability.

Full details relating to the exceptions eligibility criteria are contained in:

Section 5 of SASE for Intermediate Level Apprenticeships  
Section 31 of SASE for Advanced Level Apprenticeships

Please note that some frameworks may have English and Maths grade/level requirements that are **above** the SASE **regular** minimum requirements. The exceptions relating to the use of British Sign Language or Entry Level 3 qualifications, detailed above, **do not apply** to **industry-specific** minimum entry requirements.

Please check specific framework documents to ascertain where this is the case and/or check directly with the Issuing Authority responsible for the framework.

**Please note that the Transferable Skills tables within this document have not been updated to reflect the recent SASE changes and do not include the expanded range of acceptable qualifications. Refer to SASE for a full list of acceptable qualifications.**

The updated version of SASE can be accessed here:

<https://www.gov.uk/government/publications/specification-of-apprenticeship-standards-for-england>

# Higher Apprenticeship in Advanced Manufacturing Engineering - Level 4 (England)

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# Framework summary

## Higher Apprenticeship in Advanced Manufacturing Engineering - Level 4

## Higher Apprenticeship in Advanced Manufacturing Engineering - Level 4

This framework includes information on Personal Learning and Thinking Skills

### Pathways for this framework at level 4 include:

#### Pathway 1: Aerospace

##### Competence qualifications available to this pathway:

- C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture
- C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

##### Knowledge qualifications available to this pathway:

- K1 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering
- K2 - Foundation Degree FdSc in Aerospace Computer Systems
- K3 - Foundation Degree FdSc in Aerospace Engineering Manufacturing
- K4 - Foundation Degree FdSc Engineering (Mechanical)
- K5 - Foundation Degree FdSc Engineering (Manufacture)
- K6 - Foundation Degree FdEng Aeronautical Engineering
- K7 - Foundation Degree FdEng Aircraft Engineering
- K8 - Foundation Degree FdEng in Integrated Engineering
- K9 - Foundation Degree FdEng in Aeronautical Engineering (Manufacture)
- K10 - HNC in Manufacturing Technology
- K11 - HNC in Electrical and Electronic Technology
- K12 - HNC in Mechanical Technology
- K13 - Foundation Degree FdSc Manufacturing Technology
- K14 - Foundation Degree FdSc Electrical and Electronic Technology
- K15 - Foundation Degree FdSc Mechanical Technology
- K16 - Pearson BTEC Level 4 HNC Diploma in Aeronautical Engineering
- K17 - Foundation Degree FdEng Aircraft Maintenance
- K18 - City & Guilds Level 4 Diploma In Aeronautical Engineering
- K19 - HNC Aeronautical Engineering
- K20 - HNC Manufacturing Engineering
- K21 - HNC Mechanical Engineering
- K22 - HNC Mechatronics
- K23 - Foundation Degree FdSc Mechanical Engineering
- K24 - Diploma in Higher Education Manufacturing Engineering
- K25 - Foundation Degree FdSc Mechanical and Manufacturing Engineering
- K26 - Foundation Degree FdSc in Mechatronics
- K27 - Foundation Degree FdEng Aerospace Engineering
- K28 - Foundation Degree (FdEng) Manufacturing Technology

- K29 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering
- K30 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K31 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering
- K32 - Pearson BTEC Level 5 Higher National Diploma in Engineering
- K33 - Pearson BTEC Level 5 Higher National Diploma in Aeronautical Engineering
- K34 - HNC Aeronautical Engineering
- K35 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering
- K36 - Pearson BTEC Level 5 HND Diploma in Aeronautical Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

## Pathway 2: Nuclear Related Technology

**Competence qualifications available to this pathway:**

- C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture
- C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

- K1 - Foundation Degree FdSc in Nuclear Related Technology (Design Engineering)
- K2 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering
- K3 - Foundation Degree FdEng in Integrated Engineering
- K4 - HNC in Manufacturing Technology
- K5 - HNC in Electrical and Electronic Technology
- K6 - HNC in Mechanical Technology
- K7 - Foundation Degree FdSc Manufacturing Technology
- K8 - Foundation Degree FdSc Electrical and Electronic Technology
- K9 - Foundation Degree FdSc Mechanical Technology
- K10 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering
- K11 - HNC Manufacturing Engineering
- K12 - HNC Mechanical Engineering
- K13 - HNC Mechatronics
- K14 - Foundation Degree FdEng in Mechanical Engineering
- K15 - Foundation Degree FdSc Mechanical and Manufacturing Engineering
- K16 - Foundation Degree FdEng Electrical and Electronic Engineering
- K17 - Foundation Degree FdSc in Mechatronics
- K18 - Foundation Degree (FdEng) Manufacturing Technology
- K19 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K20 - Pearson BTEC Level 4 Higher National Certificate in Nuclear Engineering
- K21 - Pearson BTEC Level 5 Higher National Diploma in Nuclear Engineering
- K22 - Foundation Degree FdEng in Naval Architecture

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities

- Functional skills

### Pathway 3: Mechanical

#### Competence qualifications available to this pathway:

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture

C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

#### Knowledge qualifications available to this pathway:

K1 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering

K2 - Pearson BTEC Level 4 HNC Diploma in General Engineering

K3 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering

K4 - Foundation Degree FdEng Mechanical Manufacturing Engineering

K5 - Foundation Degree FdEng in Integrated Engineering

K6 - Foundation Degree FdEng in Mechanical Engineering

K7 - Foundation Degree FdEng in Mechanical Engineering

K8 - Foundation Degree FdEng in Plant and Process Engineering

K9 - Foundation Degree FdEng in Process Engineering Management

K10 - HNC in Manufacturing Technology

K11 - HNC in Electrical and Electronic Technology

K12 - HNC in Mechanical Technology

K13 - Foundation Degree FdSc Manufacturing Technology

K14 - Foundation Degree FdSc Electrical and Electronic Technology

K15 - Foundation Degree FdSc Mechanical Technology

K16 - Foundation Degree FdEng in Engineering

K17 - HNC in Mechanical Engineering

K18 - HND in Mechanical Engineering

K19 - HNC Engineering

K20 - HND Engineering

K21 - Foundation Degree FdSc Engineering

K22 - HNC in Engineering

K23 - Foundation Degree FdSc Engineering

K24 - HNC Mechanical Technology

K25 - Foundation Degree FdEng in Industrial Engineering

K26 - Foundation Degree in Casting

K27 - HNC Manufacturing Engineering

K28 - HNC Mechanical Engineering

K29 - HNC Mechatronics

K30 - HNC Fabrication & Welding

K31 - HNC Plant & Process Engineering

K32 - HNC Mechanical Design and Manufacture

K33 - Foundation Degree FdSc in Mechanical Design and Manufacture

K34 - Foundation Degree FdSc Mechanical Engineering

K35 - Foundation Degree FdEng Renewable Energy Technologies

K36 - Foundation Degree FdEng Mechanical Engineering

K37 - Foundation Degree FdSc Engineering (Mechanical)

K38 - HNC in Engineering (Mechanical)  
K39 - HNC in Engineering (Mechatronics)  
K40 - HNC Mechanical and Computer Aided Engineering  
K41 - HNC Mechanical & Manufacturing Engineering  
K42 - HNC Engineering Technologies - Mechanical  
K43 - HNC Engineering Technologies - Electrical & Electronics  
K44 - Foundation Degree FdEng in Mechanical Engineering  
K45 - Pearson BTEC Level 5 HND Diploma in General Engineering  
K46 - Pearson BTEC Level 5 HND Diploma in Mechanical Engineering  
K47 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering  
K48 - HNC Mechanical & Production Engineering  
K49 - HND Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 4: Mechanical (continuation of Pathway 3)**

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture  
C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

K1 - Diploma in Higher Education Manufacturing Engineering  
K2 - Foundation Degree FdEng Integrated Engineering  
K3 - Foundation Degree FdEng Materials Engineering  
K4 - Foundation Degree FdEng Mechanical Engineering  
K5 - HNC Engineering (Mechanical Design)  
K6 - HNC Engineering (Manufacturing Management)  
K7 - HNC Engineering (Electronic Design)  
K8 - Foundation Degree FdEng Engineering (Mechanical Design)  
K9 - Foundation Degree FdEng Engineering (Manufacturing Management)  
K10 - Foundation Degree FdEng Engineering (Electronic Design)  
K11 - HNC Mechanical and Manufacturing Engineering  
K12 - Foundation Degree FdSc Mechanical and Manufacturing Engineering  
K13 - Foundation Degree FdSc in Mechatronics  
K14 - Foundation Degree (FdEng) Manufacturing Technology  
K15 - Cert HE Mechanical and Manufacturing Engineering  
K16 - Foundation Degree FdEng Engineering  
K17 - Foundation Degree (FdEng) Mechanical Engineering  
K18 - HNC Engineering  
K19 - Foundation Degree (FdSc) in Electrical/ Electronic Engineering  
K20 - Foundation Degree (FdSc) in Naval Architecture  
K21 - Foundation Degree (FdSc) in Mechanical Engineering

K22 - Pearson BTEC Level 4 Higher National Certificate in Engineering  
K23 - Pearson BTEC Level 5 Higher National Diploma in Engineering  
K24 - HNC Manufacturing and Mechatronic Engineering  
K25 - Mechanical Engineering HNC  
K26 - Mechanical Engineering HND  
K27 - HNC Mechanical Engineering  
K28 - HND General Engineering  
K29 - HND Engineering  
K30 - Foundation Degree FdEng Plant Engineering (Engineering Systems)

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

### Pathway 5: Electrical/ Electronics

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture  
C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

K1 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering  
K2 - Foundation Degree FdEng Electrical/ Electronic Engineering  
K3 - Foundation Degree FdEng in Integrated Engineering  
K4 - Foundation Degree FdEng in Electrical and Electronic Engineering  
K5 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering  
K6 - Foundation Degree FdEng in Electrical and Electronic Engineering  
K7 - HNC in Manufacturing Technology  
K8 - HNC in Electrical and Electronic Technology  
K9 - HNC in Mechanical Technology  
K10 - Foundation Degree FdSc Manufacturing Technology  
K11 - Foundation Degree FdSc Electrical and Electronic Technology  
K12 - Foundation Degree FdSc Mechanical Technology  
K13 - Foundation Degree FdEng in Engineering  
K14 - HNC in Electrical and Electronic Engineering  
K15 - HND in Electrical and Electronic Engineering  
K16 - HNC in Mechatronics Engineering  
K17 - HNC in Electrical and Electronics Engineering  
K18 - Foundation Degree FdSc in Mechatronics Engineering  
K19 - Foundation Degree FdSc in Electrical / Electronics Engineering  
K20 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering  
K21 - Pearson BTEC Level 4 HNC Diploma in Electronic Engineering  
K22 - HNC Engineering  
K23 - HND Engineering  
K24 - HNC Engineering



- K25 - Foundation Degree FdSc Engineering
- K26 - HNC Electrical and Electronic Technology
- K27 - Foundation Degree FdEng in Industrial Engineering
- K28 - HNC Manufacturing Engineering
- K29 - HNC Mechatronics
- K30 - HNC Electrical & Electronic Engineering
- K31 - HNC Instrumentation & Control Engineering
- K32 - HNC Electronics
- K33 - Foundation Degree FdSc Electronics and Communications
- K34 - Foundation Degree FdEng Renewable Energy Technologies
- K35 - Foundation Degree FdEng Electrical and Electronic Engineering
- K36 - Foundation Degree FdEng Electrical and Electronic Engineering
- K37 - HNC in Engineering (Electrical and Electronic)
- K38 - HNC in Electrical and Electronic Engineering
- K39 - HNC Engineering Technologies - Mechanical
- K40 - HNC Engineering Technologies - Electrical & Electronics
- K41 - Foundation Degree FdEng Electrical and Electronic Engineering
- K42 - Foundation Degree FdSc in Mechatronics
- K43 - Foundation Degree (FdEng) Manufacturing Technology
- K44 - Cert HE Electronic Engineering
- K45 - Foundation Degree FdEng Electronic Engineering
- K46 - Pearson BTEC Level 5 HND Diploma in Electrical and Electronic Engineering
- K47 - Pearson BTEC Level 5 HND Diploma in Electrical Engineering
- K48 - Pearson BTEC Level 5 HND Diploma in Electronic Engineering
- K49 - HNC Electrical & Electronic Engineering
- K50 - HND Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 6: Electrical/ Electronics (continuation of Pathway 5)**

**Competence qualifications available to this pathway:**

- C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture
- C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

- K1 - HNC Engineering
- K2 - Foundation Degree FdSc Engineering
- K3 - Foundation Degree (FdSc) in Electrical/ Electronic Engineering
- K4 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K5 - Pearson BTEC Level 5 Higher National Diploma in Engineering
- K6 - HNC Electronics and Robotic Control
- K7 - HNC Electrical and Electronic Engineering

K8 - HND Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 7: Automotive**

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture

C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

K1 - Foundation Degree FdSc Automotive Management & Technologies

K2 - Pearson BTEC Level 4 HNC Diploma in Automotive Engineering

K3 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering

K4 - HNC in Manufacturing Technology

K5 - HNC in Electrical and Electronic Technology

K6 - HNC in Mechanical Technology

K7 - Foundation Degree FdSc Manufacturing Technology

K8 - Foundation Degree FdSc Electrical and Electronic Technology

K9 - Foundation Degree FdSc Mechanical Technology

K10 - Foundation Degree FdEng in Engineering

K11 - Pearson BTEC Level 4 HNC Diploma in General Engineering

K12 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering

K13 - Foundation Degree FdEng in Industrial Engineering

K14 - HNC Manufacturing Engineering

K15 - HNC Mechatronics

K16 - HNC Electrical & Electronic Engineering

K17 - HNC Electrical & Electronic Engineering by Flexible Open Learning

K18 - Foundation Degree FdSc Mechanical and Manufacturing Engineering

K19 - Foundation Degree FdEng Production Engineering

K20 - Foundation Degree (FdEng) Manufacturing Technology

K21 - Pearson BTEC Level 4 Higher National Certificate in Engineering

K22 - Pearson BTEC Level 5 Higher National Diploma in Engineering

K23 - HND Engineering

K24 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering

K25 - HNC Mechanical & Production Engineering

K26 - HNC Electrical & Electronic Engineering

K27 - HND Engineering

K28 - Foundation Degree in Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

## Pathway 8: Maintenance

### Competence qualifications available to this pathway:

- C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture
- C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

### Knowledge qualifications available to this pathway:

- K1 - Foundation Degree FdEng Electrical/ Electronic Engineering
- K2 - Pearson BTEC Level 4 HNC Diploma in General Engineering
- K3 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering
- K4 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering
- K5 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering
- K6 - Foundation Degree FdEng in Integrated Engineering
- K7 - HNC in Manufacturing Technology
- K8 - HNC in Electrical and Electronic Technology
- K9 - HNC in Mechanical Technology
- K10 - Foundation Degree FdSc Manufacturing Technology
- K11 - Foundation Degree FdSc Electrical and Electronic Technology
- K12 - Foundation Degree FdSc Mechanical Technology
- K13 - Foundation Degree in Engineering
- K14 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering
- K15 - HNC Engineering
- K16 - HND Engineering
- K17 - HNC Engineering
- K18 - Foundation Degree FdSc Engineering
- K19 - Foundation Degree FdEng in Industrial Engineering
- K20 - HNC Manufacturing Engineering
- K21 - HNC Mechatronics
- K22 - HNC Electrical & Electronic Engineering
- K23 - HNC Instrumentation & Control Engineering
- K24 - HNC Mechanical Engineering
- K25 - HNC Plant & Process Engineering
- K26 - HNC in Mechanical Design and Manufacture
- K27 - Foundation Degree FdSc in Mechanical Design and Manufacture
- K28 - Foundation Degree FdEng Mechanical Manufacturing Engineering
- K29 - HNC Mechanical and Computer Aided Engineering
- K30 - HNC in Electrical and Electronic Engineering
- K31 - Foundation Degree (FdEng) Manufacturing Technology
- K32 - HNC Engineering
- K33 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K34 - Pearson BTEC Level 5 Higher National Diploma in Engineering
- K35 - Pearson BTEC Level 5 HND Diploma in Operations Engineering
- K36 - Foundation Degree FdEng Maintenance Engineering

### Combined qualifications available to this pathway:

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 9: Wind Generation**

**Competence qualifications available to this pathway:**

- C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture
- C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

- K1 - Pearson BTEC Level 4 HNC Diploma in General Engineering
- K2 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering
- K3 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering
- K4 - Foundation Degree FdEng Renewable Energy Technologies
- K5 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering
- K6 - Foundation Degree FdEng in Industrial Engineering
- K7 - HNC Manufacturing Engineering
- K8 - HNC Mechatronics
- K9 - HNC Electrical & Electronic Engineering
- K10 - HNC Electromechanical Engineering (Renewable Energy Systems)
- K11 - HNC Mechanical Engineering
- K12 - Foundation Degree FdEng Electrical and Electronic Engineering
- K13 - Foundation Degree (FdEng) Manufacturing Technology
- K14 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K15 - Pearson BTEC Level 5 Higher National Diploma in Engineering
- K16 - Pearson BTEC Level 5 HND Diploma in General Engineering
- K17 - Pearson BTEC Level 5 HND Diploma in Operations Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 10: Research and Development - no longer available to new starts**

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

**Pathway 11: Marine**

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture

C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

K1 - Pearson BTEC Level 4 HNC Diploma in Marine Engineering

K2 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering

K3 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering

K4 - Pearson BTEC Level 4 HNC Diploma in Electronic Engineering

K5 - Pearson BTEC Level 4 HNC Diploma in General Engineering

K6 - Foundation Degree FdSc Subsea Engineering

K7 - HNC Electrical & Electronic Engineering

K8 - HNC Instrumentation & Control Engineering

K9 - HNC Mechatronics

K10 - HNC Mechanical and Computer Aided Engineering

K11 - HNC in Electrical and Electronic Engineering

K12 - Foundation Degree FdEng Marine Systems Engineering

K13 - HNC Engineering

K14 - Foundation Degree FdSc Engineering

K15 - Foundation Degree (FdSc) in Naval Architecture

K16 - Pearson BTEC Level 4 Higher National Certificate in Engineering

K17 - Pearson BTEC Level 5 Higher National Diploma in Engineering

K18 - Pearson BTEC Level 5 HND Diploma in Electrical and Electronic Engineering

K19 - Pearson BTEC Level 5 HND Diploma in Electrical Engineering

K20 - Pearson BTEC Level 5 HND Diploma in Electronic Engineering

K21 - Pearson BTEC Level 5 HND Diploma in General Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

## Pathway 12: Space Engineering

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture

C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

K1 - Foundation Degree in Space Engineering

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

## Pathway 13: Rail Engineering

**Competence qualifications available to this pathway:**

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture

C2 - \*Level 4 NVQ Diploma in Engineering Manufacture

**Knowledge qualifications available to this pathway:**

- K1 - Foundation Degree FdEng Railway Engineering
- K2 - HNC Railway Engineering
- K3 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering
- K4 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering
- K5 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering
- K6 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering
- K7 - HNC Electrical & Electronic Engineering
- K8 - HNC Instrumentation & Control Engineering
- K9 - HNC Mechatronics
- K10 - HNC Mechanical Engineering
- K11 - HND Mechatronics
- K12 - HND Mechanical Engineering
- K13 - HND Mechanical Engineering by Flexible Open Learning
- K14 - Foundation Degree FdSc Mechanical and Manufacturing Engineering
- K15 - Foundation Degree FdEng Electrical and Electronic Engineering
- K16 - Foundation Degree (FdEng) Manufacturing Technology
- K17 - Pearson BTEC Level 4 Higher National Certificate in Engineering
- K18 - Foundation Degree (FdSc) in Computing

**Combined qualifications available to this pathway:**

N/A

**This pathway also contains information on:**

- Employee rights and responsibilities
- Functional skills

# Framework information

## Information on the Issuing Authority for this framework:

### SEMTA

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

Issue number: 22	<b>This framework includes:</b>
Framework ID: FR04450	Level 4
Date this framework is to be reviewed by: 31/12/2019	<b>This framework is for use in: England</b>

## Short description

The Higher Apprenticeship framework for Advanced Manufacturing Engineering at Level 4 has been designed to provide the manufacturing and engineering sectors with high grade technicians and engineers who have practical skills, combined with a higher education qualification. This will facilitate progression to Level 5/6 qualifications and enable them to work towards 'Incorporated Engineer' status. Higher Apprentices will undertake higher-level technical occupations in such sectors as aerospace, nuclear, mechanical, electrical / electronics, automotive, maintenance, wind generation, marine, space and rail engineering.

# Contact information

## Proposer of this framework

This framework was originally developed by a Consortium of Manufacturing Sector Skills/Sector Skills Bodies comprising of Semta, Cogent Skills, NSA Food & Drink and formerly Proskills, and the following companies and their supply chains, BAE Systems, Rolls Royce, Airbus, Aircelle, North West Aerospace Alliance, GKN, John Huddleston Engineering, Auto Marine Cables, E Harding & Sons, Siemens, Jaguar Landrover, Ford, Bentley Motors, National Space Centre, Magna Parva, MBDA, ITP Engines UK, Avanti Communications, COM DEV EUROPE, University of Leicester Space Research Centre, Remploy, Pilkington, The Manufacturing Institute and the National Skills Academy for Rail (NSAR).

## Developer of this framework

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# Revising a framework

## Contact details

Who is making this revision: Standards & Frameworks  
Your organisation: Semta  
Your email address: frameworks@semta.org.uk

## Why this framework is being revised

This framework is being revised to:

- add knowledge qualifications as requested by Awarding Organisations/Employers

## Summary of changes made to this framework

### Pathway 2: Nuclear

One Knowledge qualification added

### Pathway 4: Mechanical (Continued)

One Knowledge qualification added

## Qualifications removed

None

## Qualifications added

### Pathway 2: Nuclear

K22 - Foundation Degree FdEng in Naval Architecture (City College Plymouth)

### **Pathway 4: Mechanical (Continued)**

K30 - Foundation Degree FdEng Plant Engineering (Engineering Systems) (University of Cumbria)

### **Qualifications that have been extended**

# Purpose of this framework

## Summary of the purpose of the framework

An Apprenticeship is a job with an accompanying skills development programme designed by employers in the sector. It allows the apprentice to gain technical knowledge and real practical experience, along with functional 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 Apprenticeship must have an Apprenticeship Agreement between the employer and the 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.

The Higher Apprenticeship framework for Advanced Manufacturing Engineering at Level 4 has been designed to provide the manufacturing and engineering sector with high grade technicians and engineers who have practical skills, combined with a higher education qualification. The framework will facilitate seamless progression from level 4 to level 6 qualifications and enable apprentices to work towards Incorporated Engineer status.

The manufacturing sector is broader than the remit of any single Sector Skills Council (SSC) therefore, originally we worked together as a consortium of SSCs/SSBs to address this important skills need:

**Cogent:** chemical manufacturing, nuclear science, oil and gas extraction (also includes process technology, bioscience, polymer and sign making)

**Improve:** food and drink manufacturing and processing

**Proskills:** printing, mineral extraction and processing, health and safety and process and manufacturing of furniture, glass, ceramics, coatings and paper (also includes glazing, building products, wood and mining)

**Semta:** science, engineering and manufacturing.

## Profile of the Advanced Manufacturing Engineering sector in England

The manufacturing sector in England employs approximately 2.4 million people across nearly 120,000 establishments, with an estimated 1.27 million engineers, scientists and technologists

working across the manufacturing sectors. Of these technical roles, around a third (458,000) are employed in higher-level technical roles made up of 67,000 technicians, 174,000 professional engineers and 217,000 engineering managers.

The main sub-occupations within the higher-level technical occupations are:

- Technicians - engineering technicians, draftspersons, laboratory technicians, electrical and electronics technicians and quality assurance technicians
  - Professionals – mechanical engineers, design and development engineers, production and process engineers and planning and quality control engineers
  - Managers – production, works and maintenance managers, research and development
  - Managers and quality assurance managers.
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- Just over half of this workforce is qualified to NVQ Level 4 or equivalent and above which leaves just under half with qualifications below Level 4 or the equivalent
  - The workforce is predominantly white, male, with around 86% aged in the 25 – 60 range, which means that the workforce is aging
  - There are around 6,600 vacancies per year with employers reporting around 1,650 of these vacancies being hard to fill as one third of applicants did not have the required technical and practical skills
  - Around 42,500 employees have skills gaps in higher-level occupations in the manufacturing sector made up of 12,400 technicians, 9,400 professionals and 20,700 managers.

### **Challenges facing the Advanced Manufacturing sector**

- There is a demand from employers to increase the number of employees qualified to level NVQ Level 4 or equivalent and above in order to increase productivity and for them to remain competitive
- The workforce is aging and 67,300 higher-level technical workers (13,400 per annum) are required over the period 2012-2016 to replace those retiring in England
- Despite the recession, manufacturing employers still show a substantial demand for new recruits. In 2009, 3% of manufacturing establishments in England had vacancies for higher-level occupations. Of those manufacturing sites with vacancies for higher-level occupations:
  - 16% had vacancies for technicians,
  - 7% had vacancies for professionals
  - 12% had vacancies for managers.
  - higher-level vacancies totalling 6,600 , made up of 2,200 technicians, 3,200 professionals and 1,200 managers
- Employers experiencing difficulties in filling higher-level occupations report that this impacts on their business by increasing the workload for other staff, increases operating costs,

difficulties introducing new working practices and in meeting quality standards, delays in developing new products and services and loss of business orders to competitors

- The incidence of higher-level occupational skills gaps in the manufacturing sector increases by size of establishment, ranging from 4% of micro-sized establishments, 13% of SMEs and 47% of large establishments
- The importance of higher-level technical roles to manufacturing is growing. In 2001, higher-level technical roles made up 14% of total manufacturing employment. By 2010 this figure was 19%. This trend is expected to continue, with jobs in medium to low-level skilled craft and operator occupations projected to decrease their share of total employment during 2012 to 2016
- For those establishments with higher-level technical skills gaps, it is expected that staff would mainly need to acquire new skills or knowledge in the next 12 months as a result of introducing new working practices, developing new products or services, and the introduction of new technologies or equipment
- Between 2012 to 2016, there is expected to be a net requirement across the manufacturing sectors in England for 67,300 higher-level technical roles (15,500 technicians, 20,100 professional engineers and 31,700 engineering managers). This would equate to a total annual requirement for 13,400 people (3,100 technicians, 4,000 professional engineers and 6,300 engineering managers). The majority of this requirement will be due to retirements (11% of the current workforce in higher-level technical occupations is aged 60 plus).

In order to meet the challenges to fill higher-level occupational skills gaps, manufacturing employers have increased training activity/spend or they are increasing and expanding trainee programmes, such as apprenticeships.

Employers are supporting the Higher Apprenticeship in Advanced Manufacturing because it provides a cost effective, comprehensive package of qualifications at levels 4 and 6, rather than using stand alone qualifications, which can lead to Incorporated Engineer status to meet their higher level skills needs.

The Space Engineering Industry is worth a massive £9.1 billion to the UK economy every year and is currently growing at a rate of 7.5%. The Space Engineering pathway will help to sustain this growth – direct consultation with the industry has shown that there is a need for new entrants to take advantage of the growing opportunities in the sector and this framework will help deliver these personnel.

Rail is a key economic enabler and is determined to further improve its support for the economy. The Eddington Study<sup>1</sup> identified three key transport markets that are crucial to the productivity and competitiveness of the economy:

- urban areas and their catchments
- inter-urban corridors showing signs of congestion and unreliability

- international links via ports and airports showing signs of congestion and unreliability.

Rail has a role in each of these markets. It can provide reliable, high levels of accessibility along the main transport corridors in the country and to the locations that drive economic growth. Rail supports the economies of London and the wider South East region, other towns and cities of Britain, our industries and their markets, our tourist and leisure destinations, and our ports and airports. Rail freight makes a significant contribution to the economy by supporting key industrial sectors and is also penetrating other markets where it can serve the trunk-haul function for distribution of other products. Rail engineering skills form a vital component of maintaining and improving the rail infrastructure from electrification of the East Coast line to development of HS2.

The competence and knowledge qualifications in this framework contribute to general competence as measured in the Engineering Council's UK specification and are endorsed by the IMechE, IET and the Royal Aeronautical Society (RAeS).

The pathways in this framework at Level 4 cover a wide range of job roles in advanced manufacturing and engineering and which broadly fit into the higher-level skills requirements for the following sectors:

- Aerospace
- Nuclear Related Technology
- Mechanical
- Electrical/Electronics
- Automotive
- Maintenance
- Wind Generation
- Marine
- Space Engineering
- Rail Engineering

### IMPORTANT NOTES

**1. The number of knowledge qualifications in Pathway 3 (Mechanical) now exceeds 50 and in order to facilitate this, the Mechanical pathway now covers both pathway 3 AND 4. Pathway 3 is called Mechanical and Pathway 4 is called Mechanical (continuation of Pathway 3). The available competency qualifications, and all other framework requirements, are the same for both pathways. Any of the Knowledge qualifications listed in either Pathway 3 or 4 can be used as the underpinning knowledge for the chosen Competency qualification. In the future, should any additional knowledge qualifications need to be added to the Mechanical pathway of this framework, they will be included in Pathway 4: Mechanical (continuation of Pathway 3). Please note that the splitting of the Mechanical pathway across Pathway 3 and 4, means that all the subsequent pathways, in this version of the framework, have been renumbered accordingly.**

**2. The number of knowledge qualifications in Pathway 5 (Electrical/Electronics) now exceeds 50 and in order to facilitate this, the Electrical/Electronics pathway now covers both pathway 5 AND 6. Pathway 5 is called Electrical/Electronics and Pathway 6 is called Electrical/Electronics (continuation of Pathway 5). The available competency qualifications, and all other framework requirements, are the same for both pathways. Any of the Knowledge qualifications listed in either Pathway 5 or 6 can be used as the underpinning knowledge for the chosen Competency qualification. In the future, should any additional knowledge qualifications need to be added to the Electrical/Electronics pathway of this framework, they will be included in Pathway 6: Electrical/Electronics (continuation of Pathway 5). Please note that the splitting of the Electrical/Electronics pathway across Pathway 5 and 6, means that all the subsequent pathways, in this version of the framework, have been renumbered accordingly.**

**3. The competency qualifications in the Research and Development pathway (previously Pathway 10) have expired and are no longer available. This pathway has now been removed. Apprentices already registered on it will be able to complete, but it is no longer open for new starts.**

## **Aims and objectives of this framework (England)**

To provide the manufacturing and engineering sector with high grade technicians and engineers who possess practical skills, combined with a higher education qualification to meet the skills needs of employers and to help them to improve productivity and remain competitive.

Further objectives are to:

- provide apprentices with the technical knowledge, skills and competence at Level 4 in one framework to operate at higher technician level in manufacturing and engineering
- attract learners who wish to gain a higher education qualification while receiving a salary through a work based learning route
- attract learners from diverse backgrounds to help address the equality and diversity challenges faced by the sector, including those of an ageing workforce
- develop apprentices employability skills making them more attractive to all employers whichever career they choose
- help improve recruitment and retention rates within the industry by offering appropriate career progression into high level jobs and training, working towards Engineering Technician status and Incorporated Engineer by offering appropriate career progression into high level jobs and training.

# Entry conditions for this framework

Employers wish to attract applicants who have an interest in working in a manufacturing/ engineering environment at technician and who come from a diverse range of backgrounds with a wide range of experience, achievements or qualifications.

Entry at level 4 within the framework is flexible in that applicants:

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

**Please note:** Applicants for this apprenticeship framework need to be 18+ years

## Initial Assessment

It is highly likely that applicants will be asked to undertake a variety of tests which will include English, Maths, spatial awareness and problem solving, supported by an interview. These are not meant as a barrier to entry but more to gauge the ability of the applicant to achieve the programme and to tailor the individual learning plan to meet their needs and those of the employer. In some cases, employers may wish to recruit apprentices who have the ability to eventually undertake a Level 6 apprenticeship, who would start initially at Level 4. Under these circumstances, candidates would need to have appropriate A levels or other relevant qualifications that would allow them entry to Higher Education at Level 6.

## Rules to avoid the need to repeat qualifications

Processes exist to make sure that applicants with relevant prior knowledge, qualifications and/or experience are not disadvantaged by having to repeat learning. Colleges, Universities, Training Providers and Awarding Organisations will be able to advise on the current rules for accrediting prior learning (APL) and experience. 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.

## Transferable skills

Although not a requirement that entrants should have completed the transferable skills in English and Mathematics at a minimum of Level 2 on entry to the framework, the industry has stated they should be attained. These could be achieved either through completing functional skills at Level 2/3 or other qualifications such as GCSEs/O levels or A/AS levels in the required subjects at the required grades.



Changes to the English and Maths minimum requirements for Apprenticeship starts from 21st September 2018, and Apprenticeships remaining incomplete on 21st September 2018, are summarised in the preface to this framework. The SASE modifications have further extended the list of qualifications that meet the minimum English and Maths requirements. This now allows for the acceptance of a wider range of UK-wide qualifications and also certain international qualifications, where these are supported by a suitable NARIC Statement of Comparability. The new equivalent numerically graded GCSEs and the wider range of exemption qualifications can be found at

[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/630068/Specification\\_of\\_Apprenticeship\\_Standards\\_for\\_England\\_.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/630068/Specification_of_Apprenticeship_Standards_for_England_.pdf)

From 6th April 2015 the “5 year rule” has been removed so acceptable qualifications, achieved before September 2012, are now in scope. This includes GCSEs, iGCSEs, A and AS Levels, O Levels and Key Skills.

### **Competence qualifications**

If applicants have already achieved the NVQ Level 4 Extended Diploma in Engineering Manufacture or one of the competence qualifications at Level 4 (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. The hours that were spent gaining the competence qualification may be counted towards the total hours for the apprenticeship.

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

If however they have no record of competence, they will have to undertake the relevant competence qualification as a prerequisite before undertaking the competencies described within the UK Spec.

### **Knowledge qualifications**

If an applicant has the relevant knowledge qualification (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. The hours that were spent gaining the qualification may be counted towards the total hours for the apprenticeship.

### **Prior experience in the sector**

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

## Level 4

Title for this framework at level 4

# Higher Apprenticeship in Advanced Manufacturing Engineering - Level 4

### Pathways for this framework at level 4

Pathway 1:	Aerospace
Pathway 2:	Nuclear Related Technology
Pathway 3:	Mechanical
Pathway 4:	Mechanical (continuation of Pathway 3)
Pathway 5:	Electrical/ Electronics
Pathway 6:	Electrical/ Electronics (continuation of Pathway 5)
Pathway 7:	Automotive
Pathway 8:	Maintenance
Pathway 9:	Wind Generation
Pathway 10:	Research and Development - no longer available to new starts
Pathway 11:	Marine
Pathway 12:	Space Engineering
Pathway 13:	Rail Engineering

## Level 4, Pathway 1: Aerospace

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Aerospace)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Electrical /Electronics Engineering Senior Technician (Aerospace Computer Systems)	Development, manufacture and testing of electrical / electronic components for use in aerospace platforms, including instrumentation & power systems, ensuring compliance with relevant standards and quality requirements
Software Engineering Senior Technician (Aerospace Computer Systems)	Development, coding, testing and implementation of software systems & protocols for use in aerospace platforms
Systems Engineering Senior Technician (Aerospace Computer Systems)	Development, implementation and testing of aircraft systems for use in cockpit, power, and distributed computing, ensuring compliance with relevant standards and quality requirements
Electrical/ Electronics Senior Technician	Design, building and testing of aerospace integrated electronic systems ensuring compliance with relevant standards and quality requirements
Software Senior Technician	Software design, verification and testing of aerospace avionic and instrumentation software packages
Systems Senior Technician	Design, assembly and test of avionic integrated systems, programmes and components
Systems Operations Senior Technician	Customer-facing aerospace operational electrical and avionic testing and fault finding
Aircraft Systems Development Senior Technician	Development of design specifications, prototyping and testing of new aircraft systems: mechanical, electrical, avionic, electronic, pneumatic or hydraulic
Manufacturing Senior Technician	Development and optimisation of manufacturing processes and systems to meet aerospace manufacturing requirements
Senior Quality Technician	Implementation and compliance with AS9100 and AS9102 aerospace quality assurance systems. Responsible for resolving quality issues that may result in non-compliance or late delivery
Senior Design Technician	Design, test, and supervise the manufacture of aircraft, spacecraft, and missiles. Disciplines include aerodynamics, propulsion, avionics, material science, structural analysis and advanced manufacturing

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/8829/4	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Foundation Degree FdSc in Aerospace Computer Systems					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	N/A	University of West England (UWE)	N/A	N/A	240

K3 - Foundation Degree FdSc in Aerospace Engineering Manufacturing					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	N/A	University of West England (UWE)	N/A	N/A	240

K4 - Foundation Degree FdSc Engineering (Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	University of Plymouth	N/A	N/A	240

K5 - Foundation Degree FdSc Engineering (Manufacture)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	N/A	University of Plymouth	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdEng Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Newcastle College Group	N/A	N/A	240

K7 - Foundation Degree FdEng Aircraft Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Kingston University	N/A	N/A	240

K8 - Foundation Degree FdEng in Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Sheffield Hallam University	N/A	N/A	240

K9 - Foundation Degree FdEng in Aeronautical Engineering (Manufacture)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Glyndwr University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K10 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Staffordshire University	120	N/A	N/A

K11 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Staffordshire University	120	N/A	N/A

K12 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Staffordshire University	120	N/A	N/A

K13 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Staffordshire University	N/A	N/A	240



## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	Staffordshire University	N/A	N/A	240

K15 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	Staffordshire University	N/A	N/A	240

K16 - Pearson BTEC Level 4 HNC Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	500/8992/4	Pearson	120	480	N/A

K17 - Foundation Degree FdEng Aircraft Maintenance					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	Glyndwr University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K18 - City & Guilds Level 4 Diploma In Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	600/9042/X	City & Guilds	120	368	N/A

K19 - HNC Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	Teesside University	125	N/A	N/A

K20 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	N/A	Teesside University	125	N/A	N/A

K21 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K22 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	N/A	Teesside University	125	N/A	N/A

K23 - Foundation Degree FdSc Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	N/A	University of the West of England (UWE)	N/A	N/A	240

K24 - Diploma in Higher Education Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	N/A	University of Wolverhampton	N/A	N/A	240

K25 - Foundation Degree FdSc Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	University of Derby	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K26 - Foundation Degree FdSc in Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	University of the West of England (UWE)	N/A	N/A	240

  

K27 - Foundation Degree FdEng Aerospace Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	Sheffield Hallam University	N/A	N/A	240

  

K28 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	N/A	University of Sheffield	N/A	N/A	240

  

K29 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K29a	500/8824/5	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K30 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K30a	603/0450/9	Pearson	120	480	N/A

K31 - Pearson BTEC Level 4 Higher National Certificate in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K31a	603/0485/6	Pearson	120	480	N/A

K32 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K32a	603/0451/0	Pearson	240	960	N/A

K33 - Pearson BTEC Level 5 Higher National Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K33a	603/0484/4	Pearson	240	960	N/A

## Knowledge qualifications available to this pathway (cont.)

K34 - HNC Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K34a	N/A	University of Portsmouth	120	N/A	N/A

K35 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K35a	500/8828/2	Pearson	240	980	N/A

K36 - Pearson BTEC Level 5 HND Diploma in Aeronautical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K36a	500/8991/2	Pearson	240	980	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - is for use by 25 years+ only (see below)**

**K1 - K36 provide underpinning knowledge for C1a - C1c and C2a - C2b**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.



# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A
Key Skills qualification in Application of Number achieved either before September 2013 as part of the Apprenticeship, or... *	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3

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

- progression to the Higher framework for Advanced Manufacturing (Aerospace - Level 6). Please note that there is no Level 5 Advanced Manufacturing Apprenticeship.
- employment as a technician in aerospace engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

**UCAS points for this pathway: N/A**

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 2: Nuclear Related Technology

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Nuclear Related Technology)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Electrical / Electronics Senior Technician (Nuclear)	Design, manufacture and testing of electrical/ electronic components intended for use on a nuclear plant , ensuring adherence to nuclear-specific quality standards
Control and Instrumentation Senior Technician (Nuclear)	Design, selection, installation and verification of sensors and related control systems for use on nuclear plant, ensuring adherence to nuclear specific quality standards
Computer Aided Design (CAD) Senior Technician	Design of mechanical or electrical systems for nuclear applications using bespoke 3D packages (AutoCAD) Solidworks, Esplan, RSwire), generation of manufacturing drawings, production of Bill of Materials, validation of designs, demonstration of regulatory compliance.
Technical Sales Specialist (Nuclear Components)	Interpreting customer technical requirements, specifications and standards for electrical or mechanical nuclear-related components, provision of in-service support, preparation of costings and quotes, managing customer relationships and contracts
Process Senior Technician (Nuclear)	Design, operation, control and optimisation of nuclear-chemical process plant, selection, installation of control systems (e.g. PLC SCADA), compliance with nuclear specific quality and regulatory requirements.
Safety/Performance Senior Technician (Nuclear)	Application of risk assessment methodologies to nuclear plant including HAZAN, HAZOP, FMEA, PSA; development of nuclear safety case and regulatory compliance statements.
Manufacturing Senior Technician	Development and optimisation of manufacturing processes and systems, application of manufacturing codes and standards pertaining to the nuclear industry
Senior Stress Technician	Applying stress analysis techniques to metal and composite components used in nuclear applications, including pressure vessels, application of Finite Element Analysis software packages, development and optimisation of physical stress analysis and NDT techniques.

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Foundation Degree FdSc in Nuclear Related Technology (Design Engineering)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	University of Central Lancashire via Gen II Engineering & Technology Training	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8829/4	Pearson	120	480	N/A

K3 - Foundation Degree FdEng in Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	N/A	Sheffield Hallam University	N/A	N/A	240

K4 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Staffordshire University	120	N/A	N/A

K5 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	N/A	Staffordshire University	120	N/A	N/A



## Knowledge qualifications available to this pathway (cont.)

K6 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Staffordshire University	120	N/A	N/A

K7 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Staffordshire University	N/A	N/A	240

K8 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Staffordshire University	N/A	N/A	240

K9 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Staffordshire University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K10 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	500/8824/5	Pearson	120	480	N/A

K11 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Teesside University	125	N/A	N/A

K12 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Teesside University	125	N/A	N/A

K13 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree FdEng in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	University of Sheffield	N/A	N/A	240

K15 - Foundation Degree FdSc Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Derby	N/A	N/A	240

K16 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	University of Derby	N/A	N/A	240

K17 - Foundation Degree FdSc in Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	University of the West of England (UWE)	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K18 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	University of Sheffield	N/A	N/A	240

K19 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	603/0450/9	Pearson	120	480	N/A

K20 - Pearson BTEC Level 4 Higher National Certificate in Nuclear Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	603/0491/1	Pearson	120	480	N/A

K21 - Pearson BTEC Level 5 Higher National Diploma in Nuclear Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	603/0496/0	Pearson	240	960	N/A

## Knowledge qualifications available to this pathway (cont.)

K22 - Foundation Degree FdEng in Naval Architecture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	N/A	City College Plymouth	N/A	N/A	240

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K22 provide underpinning knowledge for C1 - C1c and C2a - C2b**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A



# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

**Progression from this pathway for those who have completed a Higher Apprenticeship in Advanced Manufacturing (Nuclear Related Technology):**

- progression to the Higher framework for Advanced Manufacturing (Nuclear Related Technology - Level 6). Please note there is no Level 5 apprenticeship programme.
- employment as a technician in Nuclear engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional Recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### UCAS points for this pathway:

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 3: Mechanical

### Description of this pathway

The Mechanical Pathway is now split across both Pathway 3 and 4. This is because the available options for Knowledge qualifications for the Mechanical pathway now exceeds 50. 50 of these are listed under Pathway 3 and the rest under Pathway 4. The available Competency qualifications are the same and are listed under both Pathway 3 and 4. All of the Knowledge qualifications listed in either Pathway 3 or 4 are suitable for use in the Mechanical Pathway.

### Higher Apprenticeship in Advanced Manufacturing Engineering (Mechanical)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Manufacturing Senior Technician	Set up complex CNC production processing facilities for manufacturing operations, ensuring wherever possible these are as 'lean' as possible.
Senior Controls Technician (Mechanical Testing)	Work with other engineers and managers to discuss and develop rigs and systems design and support, to ensure smooth running of projects and effective delivery of the mechanical testing process
Senior Production Technician	Supervise and provide technical guidance to quality inspectors and junior engineering staff. Provide technical support to production and assist with product development. Solve technical issues within company and sub-contractors, suppliers and customers
Mechanical Systems Senior Technician	Apply scientific and mathematical principles to the design, manufacture and operation of efficient machines, processes and systems
Senior Quality Technician	Develop and define project quality programme and plans, ensure continuous and effective operation of project quality performance and plans, perform project quality assurance auditing of contractors and suppliers
Senior Environmental Test Technician (Defence)	Carry out and report on tests carried out on products to determine life cycles, safety compliance, environmental impact and customer specification requirements

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/8829/4	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8827/0	Pearson	120	480	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8824/5	Pearson	120	480	N/A

K4 - Foundation Degree FdEng Mechanical Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Newcastle College Group	N/A	N/A	240

K5 - Foundation Degree FdEng in Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	N/A	Sheffield Hallam University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdEng in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	University of Greenwich	N/A	N/A	240

K7 - Foundation Degree FdEng in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	University of Hull	N/A	N/A	240

K8 - Foundation Degree FdEng in Plant and Process Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	University of Hull	N/A	N/A	240

K9 - Foundation Degree FdEng in Process Engineering Management					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	University of Hull	N/A	N/A	240



## Knowledge qualifications available to this pathway (cont.)

K10 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Staffordshire University	120	N/A	N/A

K11 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Staffordshire University	120	N/A	N/A

K12 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Staffordshire University	120	N/A	N/A

K13 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Staffordshire University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	Staffordshire University	N/A	N/A	240

  

K15 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	Staffordshire University	N/A	N/A	240

  

K16 - Foundation Degree FdEng in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	Coventry University	N/A	N/A	240

  

K17 - HNC in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	University of Bedfordshire	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K18 - HND in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	University of Bedfordshire	240	N/A	N/A

K19 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	University of Northampton	160	N/A	N/A

K20 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	N/A	University of Northampton	240	240	240

K21 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	N/A	Anglia Ruskin University (ARU)	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K22 - HNC in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	N/A	University of Plymouth	120	324	N/A

K23 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	N/A	University of Plymouth	N/A	N/A	240

K24 - HNC Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	N/A	Glyndwr University	150	576	N/A

K25 - Foundation Degree FdEng in Industrial Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	Glyndwr University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K26 - Foundation Degree in Casting					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	Leeds Metropolitan University	N/A	N/A	240

K27 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	Teesside University	125	N/A	N/A

K28 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	N/A	Teesside University	125	N/A	N/A

K29 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K29a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K30 - HNC Fabrication & Welding					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K30a	N/A	Teesside University	125	N/A	N/A

  

K31 - HNC Plant & Process Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K31a	N/A	Teesside University	125	N/A	N/A

  

K32 - HNC Mechanical Design and Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K32a	N/A	Plymouth University	120	N/A	N/A

  

K33 - Foundation Degree FdSc in Mechanical Design and Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K33a	N/A	Plymouth University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K34 - Foundation Degree FdSc Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K34a	N/A	University of the West of England (UWE)	N/A	N/A	240

K35 - Foundation Degree FdEng Renewable Energy Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K35a	N/A	Newcastle College Group	N/A	N/A	240

K36 - Foundation Degree FdEng Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K36a	N/A	Manchester Metropolitan University	N/A	N/A	240

K37 - Foundation Degree FdSc Engineering (Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K37a	N/A	University of Plymouth	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K38 - HNC in Engineering (Mechanical)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K38a	N/A	University of Plymouth	120	N/A	N/A

K39 - HNC in Engineering (Mechatronics)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K39a	N/A	University of Plymouth	120	N/A	N/A

K40 - HNC Mechanical and Computer Aided Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K40a	N/A	University of Central Lancashire (ULAN)	120	N/A	N/A

K41 - HNC Mechanical & Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K41a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A



## Knowledge qualifications available to this pathway (cont.)

K42 - HNC Engineering Technologies - Mechanical					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K42a	N/A	University of Plymouth	120	N/A	N/A

K43 - HNC Engineering Technologies - Electrical & Electronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K43a	N/A	University of Plymouth	120	N/A	N/A

K44 - Foundation Degree FdEng in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K44a	N/A	University of Sheffield	N/A	N/A	240

K45 - Pearson BTEC Level 5 HND Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K45a	500/8825/7	Pearson	240	980	N/A

## Knowledge qualifications available to this pathway (cont.)

K46 - Pearson BTEC Level 5 HND Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K46a	500/8826/9	Pearson	240	980	N/A

K47 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K47a	500/8828/2	Pearson	240	980	N/A

K48 - HNC Mechanical & Production Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K48a	N/A	University of Derby	160	N/A	N/A

K49 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K49a	N/A	University of Derby	240	N/A	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K49 provide underpinning knowledge for C1a - C1c and C2a - C2b**

**K1 - K26 from Pathway 4 also provide the required underpinning knowledge.**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing (Mechanical - Level 6). Please note there is no Level 5 Higher Apprenticeship programme
- employment as a technician in mechanical engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### UCAS points for this pathway:

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.



## Level 4, Pathway 4: Mechanical (continuation of Pathway 3)

### Description of this pathway

This pathway is a continuation of Pathway 3 (Mechanical). It includes the same Competency qualifications and an additional Knowledge qualification option. The Knowledge qualifications listed in Pathway 3 are also available as options.

### Higher Apprenticeship in Advanced Manufacturing Engineering (Mechanical)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Manufacturing Senior Technician	Set up complex CNC production processing facilities for manufacturing operations, ensuring wherever possible these are as 'lean' as possible
Senior Controls Technician (Mechanical Testing)	Work with other engineers and managers to discuss and develop rigs and systems design and support, to ensure smooth running of projects and effective delivery of the mechanical testing process
Senior Production Technician	Supervise and provide technical guidance to quality inspectors and junior engineering staff. Provide technical support to production and assist with product development. Solve technical issues within company and sub-contractors, suppliers and customers
Mechanical Systems Senior Technician	Apply scientific and mathematical principles to the design, manufacture and operation of efficient machines, processes and systems
Senior Quality Technician	Develop and define project quality programme and plans, ensure continuous and effective operation of project quality performance and plans, perform project quality assurance auditing of contractors and suppliers
Senior Environmental Test Technician (Defence)	Carry out and report on tests carried out on products to determine life cycles, safety compliance, environmental impact and customer specification requirements

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Diploma in Higher Education Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	University of Wolverhampton	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K2 - Foundation Degree FdEng Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	N/A	Sheffield Hallam University	N/A	N/A	240

K3 - Foundation Degree FdEng Materials Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	N/A	Sheffield Hallam University	N/A	N/A	240

K4 - Foundation Degree FdEng Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Sheffield Hallam University	N/A	N/A	240

K5 - HNC Engineering (Mechanical Design)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	N/A	University of Bournemouth	N/A	N/A	120

## Knowledge qualifications available to this pathway (cont.)

K6 - HNC Engineering (Manufacturing Management)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	University of Bournemouth	N/A	N/A	120

K7 - HNC Engineering (Electronic Design)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	University of Bournemouth	N/A	N/A	120

K8 - Foundation Degree FdEng Engineering (Mechanical Design)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Bournemouth University	N/A	N/A	240

K9 - Foundation Degree FdEng Engineering (Manufacturing Management)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Bournemouth University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K10 - Foundation Degree FdEng Engineering (Electronic Design)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Bournemouth University	N/A	N/A	240

K11 - HNC Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	University of Derby	N/A	N/A	120

K12 - Foundation Degree FdSc Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	University of Derby	N/A	N/A	240

K13 - Foundation Degree FdSc in Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	University of the West of England (UWE)	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	University of Sheffield	N/A	N/A	240

K15 - Cert HE Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Portsmouth	N/A	N/A	120

K16 - Foundation Degree FdEng Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	University of Portsmouth	N/A	N/A	240

K17 - Foundation Degree (FdEng) Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	Staffordshire University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K18 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	Cornwall College	120	N/A	N/A

K19 - Foundation Degree (FdSc) in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	University of Plymouth	N/A	N/A	240

K20 - Foundation Degree (FdSc) in Naval Architecture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	N/A	University of Plymouth	N/A	N/A	240

K21 - Foundation Degree (FdSc) in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	N/A	University of Plymouth	N/A	N/A	240



## Knowledge qualifications available to this pathway (cont.)

K22 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	603/0450/9	Pearson	120	480	N/A

K23 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	603/0451/0	Pearson	240	960	N/A

K24 - HNC Manufacturing and Mechatronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	N/A	University of Plymouth (via South Devon College)	120	360	N/A

K25 - Mechanical Engineering HNC					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	University of Chichester	120	1200	N/A

## Knowledge qualifications available to this pathway (cont.)

K26 - Mechanical Engineering HND					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	University of Chichester	240	2400	N/A

K27 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	University of Portsmouth	120	N/A	N/A

K28 - HND General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	N/A	University of Portsmouth	240	N/A	N/A

K29 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K29a	N/A	University of Central Lancashire (UCLan)	240	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K30 - Foundation Degree FdEng Plant Engineering (Engineering Systems)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	
K30a	N/A	University of Cumbria	N/A	N/A	240	

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**THIS PATHWAY IS A CONTINUATION OF PATHWAY 3 - MECHANICAL**

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K30 provides underpinning knowledge for C1a - C1c and C2a - C2b**

**K1 - K50 from Pathway 3 (Mechanical) also provide the required underpinning knowledge.**

The designated Technical Certificate underpins the knowledge elements of the competence qualification in this pathway. The knowledge qualification delivers essential underpinning knowledge which supports the fundamental scientific and mathematical principles that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing (Mechanical - Level 6). Please note there is no Level 5 Higher Apprenticeship programme
- employment as a technician in mechanical engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

**UCAS points for this pathway:**

*(no information)*



# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 5: Electrical/ Electronics

### Description of this pathway

The Electrical/Electronics Pathway is now split across both Pathway 5 and 6. This is because the available options for Knowledge qualifications for the Electrical/Electronics pathway now exceeds 50.

50 of these are listed under Pathway 5 and the rest under Pathway 6. The available Competency qualifications are the same and are listed under both Pathway 5 and 6. All of the Knowledge qualifications listed in either Pathway 5 or 6 are suitable for use in the Electrical/Electronics Pathway.

### Higher Apprenticeship in Advanced Manufacturing Engineering (Electrical/Electronics)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

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

There are no additional requirements other than the general entry requirements

Job title(s)	Job role(s)
Senior Electronics Production Technician	Liaison between Electronics, Design and Manufacturing facilities, actively co-ordinating and communicating electronics build, service allocation, and planning requirements
Electrical /Electronics Engineering Senior Technician (Aerospace Computer Systems)	Development, manufacture and testing of electrical/ electronic components for use in aerospace platforms, including instrumentation & power systems, ensuring compliance with relevant standards and quality requirements
Electrical / Electronics Senior Technician (Wind Power)	Design, manufacture and testing of electrical/ electronic components and systems for wind turbines, ensuring compliance to all relevant quality standards
Electronics Development Senior Technician	Design and develop analogue, digital, small power electronics and microprocessor systems for real time and industrial automation projects
Electronic Engineering Software / Hardware Senior Technician	The design and development of engineering application software for real-time embedded systems, testing systems and drafting related documentation

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/8831/2	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Foundation Degree FdEng Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	N/A	Newcastle College Group	N/A	N/A	240

  

K3 - Foundation Degree FdEng in Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	N/A	Sheffield Hallam University	N/A	N/A	240

  

K4 - Foundation Degree FdEng in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Greenwich University	N/A	N/A	240

  

K5 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/8829/4	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdEng in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	University of Hull	N/A	N/A	240

K7 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Staffordshire University	120	N/A	N/A

K8 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Staffordshire University	120	N/A	N/A

K9 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Staffordshire University	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K10 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Staffordshire University	N/A	N/A	240

K11 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Staffordshire University	N/A	N/A	240

K12 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Staffordshire University	N/A	N/A	240

K13 - Foundation Degree FdEng in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Coventry University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K14 - HNC in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	University of Bedford	120	N/A	N/A

K15 - HND in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Bedfordshire	240	N/A	N/A

K16 - HNC in Mechatronics Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	University of Plymouth	120	N/A	N/A

K17 - HNC in Electrical and Electronics Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	University of Plymouth	120	N/A	N/A



## Knowledge qualifications available to this pathway (cont.)

K18 - Foundation Degree FdSc in Mechatronics Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	University of Plymouth	N/A	N/A	240

K19 - Foundation Degree FdSc in Electrical / Electronics Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	University of Plymouth	N/A	N/A	240

K20 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	500/8257/7	Pearson	120	480	N/A

K21 - Pearson BTEC Level 4 HNC Diploma in Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	500/8830/0	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K22 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	N/A	University of Northampton	160	N/A	N/A

K23 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	N/A	University of Northampton	240	N/A	N/A

K24 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	N/A	University of Plymouth	120	324	N/A

K25 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	University of Plymouth	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K26 - HNC Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	Glyndwr University	150	576	N/A

K27 - Foundation Degree FdEng in Industrial Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	Glyndwr University	N/A	N/A	240

K28 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	N/A	Teesside University	125	N/A	N/A

K29 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K29a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K30 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K30a	N/A	Teesside University	125	N/A	N/A

K31 - HNC Instrumentation & Control Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K31a	N/A	Teesside University	125	N/A	N/A

K32 - HNC Electronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K32a	N/A	University of Plymouth	120	N/A	N/A

K33 - Foundation Degree FdSc Electronics and Communications					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K33a	N/A	University of Plymouth	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K34 - Foundation Degree FdEng Renewable Energy Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K34a	N/A	Newcastle College Group	N/A	N/A	240

K35 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K35a	N/A	Teesside University	N/A	N/A	240

K36 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K36a	N/A	Manchester Metropolitan University	N/A	N/A	240

K37 - HNC in Engineering (Electrical and Electronic)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K37a	N/A	University of Plymouth	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K38 - HNC in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K38a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A

  

K39 - HNC Engineering Technologies - Mechanical					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K39a	N/A	University of Plymouth	120	N/A	N/A

  

K40 - HNC Engineering Technologies - Electrical & Electronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K40a	N/A	University of Plymouth	120	N/A	N/A

  

K41 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K41a	N/A	University of Derby	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K42 - Foundation Degree FdSc in Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K42a	N/A	University of the West of England (UWE)	N/A	N/A	240

K43 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K43a	N/A	University of Sheffield	N/A	N/A	240

K44 - Cert HE Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K44a	N/A	University of Portsmouth	N/A	N/A	120

K45 - Foundation Degree FdEng Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K45a	N/A	University of Portsmouth	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K46 - Pearson BTEC Level 5 HND Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K46a	500/8834/8	Pearson	240	980	N/A

  

K47 - Pearson BTEC Level 5 HND Diploma in Electrical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K47a	500/8255/3	Pearson	240	980	N/A

  

K48 - Pearson BTEC Level 5 HND Diploma in Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K48a	500/8833/6	Pearson	240	980	N/A

  

K49 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K49a	N/A	University of Derby	160	N/A	N/A



## Knowledge qualifications available to this pathway (cont.)

K50 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K50a	N/A	University of Derby	240	N/A	N/A

K51 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K51a	603/0450/9	Pearson	240	N/A	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K50 provide underpinning knowledge for C1a - C1c and C2a - C2b**

**K1 - K6 from Pathway 6 also provide the required underpinning knowledge.**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

## Progression from this pathway for those who have completed a Higher Apprenticeship in Advanced Manufacturing (Electrical/Electronics):

- progression to the Higher framework for Advanced Manufacturing (Electrical/Electronics - Level 6). Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in Electrical/Electronics engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### UCAS points for this pathway:

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 6: Electrical/ Electronics (continuation of Pathway 5)

### Description of this pathway

This pathway is a continuation of Pathway 5 (Electrical/Electronics). It includes the same Competency qualifications and an additional Knowledge qualification option. The Knowledge qualifications listed in Pathway 5 are also available as options.

### Higher Apprenticeship in Advanced Manufacturing Engineering (Electrical/Electronics)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Senior Electronics Production Technician	Liaison between Electronics, Design and Manufacturing facilities, actively co-ordinating and communicating electronics build, service allocation, and planning requirements
Electrical /Electronics Engineering Senior Technician (Aerospace Computer Systems)	Development, manufacture and testing of electrical/ electronic components for use in aerospace platforms, including instrumentation & power systems, ensuring compliance with relevant standards and quality requirements
Electrical / Electronics Senior Technician (Wind Power)	Design, manufacture and testing of electrical/ electronic components and systems for wind turbines, ensuring compliance to all relevant quality standards
Electronics Development Senior Technician	Design and develop analogue, digital, small power electronics and microprocessor systems for real time and industrial automation projects
Electronic Engineering Software / Hardware Senior Technician	The design and development of engineering application software for real-time embedded systems, testing systems and drafting related documentation

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	Cornwall College	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	N/A	University of Plymouth	N/A	N/A	240

K3 - Foundation Degree (FdSc) in Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	N/A	University of Plymouth	N/A	N/A	240

K4 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	603/0450/9	Pearson	120	480	N/A

K5 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	603/0451/0	Pearson	240	960	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - HNC Electronics and Robotic Control					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	University of Plymouth (via South Devon College)	120	360	N/A

K7 - HNC Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	University of Portsmouth	120	N/A	N/A

K8 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	University of Central Lancashire (UCLan)	240	N/A	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**THIS PATHWAY IS A CONTINUATION OF PATHWAY 5 - ELECTRICAL/ELECTRONICS**

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K8 provide underpinning knowledge for C1a - C1c and C2a - C2b**

**K1 - K50 from Pathway 5 (Electrical/Electronics) also provide the required underpinning knowledge.**

The designated Technical Certificate underpins the knowledge elements of the competence qualification in this pathway. The knowledge qualification delivers essential underpinning knowledge which supports the fundamental scientific and mathematical principles that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

**Progression from this pathway for those who have completed a Higher Apprenticeship in Advanced Manufacturing (Electrical/Electronics):**

- progression to the Higher framework for Advanced Manufacturing (Electrical/Electronics - Level 6). Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in Electrical/Electronics engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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



[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 7: Automotive

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Automotive)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

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

There are no additional requirements other than the general entry requirements

Job title(s)	Job role(s)
Senior Production Technician	Plan the production run, redesign machine tools, equipment and processes to make new parts, monitor costs and production schedules, oversee quality control
Automotive Senior Technician - Design	Use draughting skills and computer-aided design software, to turn ideas into blueprints for development and testing. Weigh up issues such as reliability and safety, whether production would be cost-effective, potential environmental impact and the 'look'
Automotive Senior Technician - Development	Build and test development prototypes, use a combination of computer simulations and physical tests to assess strengths, weaknesses, performance and safety (eg test the design aerodynamics in a wind tunnel)
Senior Manufacturing Technician	Perform functions associated with all manufacturing operations, including working with engineers in set-up and calibration tasks, as well as performing rework and quality testing related to the production of parts, components, subassemblies and final assemblies
Motorsport Senior Technician (Mechanical)	Design and configuration of motorsport engines, transmissions, suspension, steering, brakes, fuel systems and other components both at the factory and trackside
Motorsport Senior Technician (Electrical / Electronics)	Setting up electrical and electronic systems on motorsport vehicles, testing performance and analysing results

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Foundation Degree FdSc Automotive Management & Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	Leeds Metropolitan University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in Automotive Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8601/7	Pearson	120	480	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8831/2	Pearson	120	480	N/A

K4 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Staffordshire University	120	N/A	N/A

K5 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	N/A	Staffordshire University	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Staffordshire University	120	N/A	N/A

K7 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Staffordshire University	N/A	N/A	240

K8 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Staffordshire University	N/A	N/A	240

K9 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Staffordshire University	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K10 - Foundation Degree FdEng in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Coventry University	N/A	N/A	240

K11 - Pearson BTEC Level 4 HNC Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	500/8827/0	Pearson	120	480	N/A

K12 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	500/8829/4	Pearson	120	480	N/A

K13 - Foundation Degree FdEng in Industrial Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Glyndwr University	N/A	N/A	240



## Knowledge qualifications available to this pathway (cont.)

K14 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	Teesside University	125	N/A	N/A

K15 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	Teesside University	125	N/A	N/A

K16 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	Teesside University	125	N/A	N/A

K17 - HNC Electrical & Electronic Engineering by Flexible Open Learning					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K18 - Foundation Degree FdSc Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	University of Derby	N/A	N/A	240

  

K19 - Foundation Degree FdEng Production Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	University of Derby	N/A	N/A	240

  

K20 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	N/A	University of Sheffield	N/A	N/A	240

  

K21 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	603/0450/9	Pearson	120	240	N/A

## Knowledge qualifications available to this pathway (cont.)

K22 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	603/0451/0	Pearson	240	960	N/A

K23 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	N/A	University of Central Lancashire (UCLan)	240	N/A	N/A

K24 - Pearson BTEC Level 5 HND Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	500/8828/2	Pearson	240	980	N/A

K25 - HNC Mechanical & Production Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	Univeristy of Derby	160	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K26 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	Univeristy of Derby	160	N/A	N/A

K27 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	University of Derby	240	N/A	N/A

K28 - Foundation Degree in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	00301348	Warwickshire College Group	N/A	N/A	240

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K28 provide underpinning knowledge for C1a - C1c and C2a - C2b**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units a Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3

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

- progression to the Higher framework for Advanced Manufacturing (Automotive - Level 6). Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in automotive engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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



[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org](http://www.theiet.org)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 8: Maintenance

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Maintenance)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Systems Maintenance Senior Technician	Co-ordinate and lead a team of maintenance technicians to ensure that the systems correctly function and by implementing a systematic approach to improving the maintenance activities undertaken
Manufacturing Plant Maintenance Senior Technician	Co-ordinate and lead a team of manufacturing plant maintenance technicians to ensure that the production equipment operates efficiently and safely by implementing a systematic approach to improving the maintenance activities including condition and performance monitoring
Engineering Services Maintenance Senior Technician	Co-ordinate and lead a team of maintenance engineers to ensure that the service supplies are working efficiently and safely by implementing a systematic approach to improving the service requirements including reducing the downtime required
Nuclear Maintenance Technician	Use diagnostic techniques to identify faults in plant, systems and components and lead scheduled maintenance of plant and equipment ensuring nuclear safety requirements are met
Biomedical Equipment Maintenance Specialist	Co-ordinate and lead a team of maintenance technicians to ensure that the biomedical equipment correctly functions by implementing a systematic approach to improving the maintenance activities undertaken

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Foundation Degree FdEng Electrical/ Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	Newcastle College Group	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8827/0	Pearson	120	480	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8829/4	Pearson	120	480	N/A

K4 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/8824/5	Pearson	120	480	N/A

K5 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/8831/2	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdEng in Integrated Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Sheffield Hallam University	N/A	N/A	240

K7 - HNC in Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Staffordshire University	120	N/A	N/A

K8 - HNC in Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Staffordshire University	120	N/A	N/A

K9 - HNC in Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Staffordshire University	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K10 - Foundation Degree FdSc Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Staffordshire University	N/A	N/A	240

K11 - Foundation Degree FdSc Electrical and Electronic Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Staffordshire University	N/A	N/A	240

K12 - Foundation Degree FdSc Mechanical Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Staffordshire University	N/A	N/A	240

K13 - Foundation Degree in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Coventry University	N/A	N/A	240



## Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	500/8960/2	Pearson	120	480	N/A

K15 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Northampton	160	N/A	N/A

K16 - HND Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	University of Northampton	240	N/A	N/A

K17 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	N/A	University of Plymouth	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K18 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	N/A	University of Plymouth	N/A	N/A	240

K19 - Foundation Degree FdEng in Industrial Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	N/A	Glyndwr University	N/A	N/A	240

K20 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	N/A	Teesside University	125	N/A	N/A

K21 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K22 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K22a	N/A	Teesside University	125	N/A	N/A

K23 - HNC Instrumentation & Control Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K23a	N/A	Teesside University	125	N/A	N/A

K24 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K24a	N/A	Teesside University	125	N/A	N/A

K25 - HNC Plant & Process Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K25a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K26 - HNC in Mechanical Design and Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K26a	N/A	University of Plymouth	120	N/A	N/A

  

K27 - Foundation Degree FdSc in Mechanical Design and Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K27a	N/A	University of Plymouth	N/A	N/A	240

  

K28 - Foundation Degree FdEng Mechanical Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K28a	N/A	Newcastle College Group	N/A	N/A	240

  

K29 - HNC Mechanical and Computer Aided Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K29a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K30 - HNC in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K30a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A

  

K31 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K31a	N/A	University of Sheffield	N/A	N/A	240

  

K32 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K32a	N/A	Cornwall College	120	N/A	N/A

  

K33 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K33a	603/0450/9	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K34 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K34a	603/0451/0	Pearson	240	960	N/A

K35 - Pearson BTEC Level 5 HND Diploma in Operations Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K35a	500/8959/6	Pearson	240	980	N/A

K36 - Foundation Degree FdEng Maintenance Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K36a	N/A	New College Durham	N/A	230	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K36 provide underpinning knowledge for C1a - C1c and C2a - C2b**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.



# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing (Maintenance - Level 6). Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in maintenance engineering in a variety of job roles and functions (see job roles)

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 9: Wind Generation

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Wind Generation)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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)
Electrical / Electronics Senior Technician (Wind Power)	Design, manufacture and testing of electrical/ electronic components and systems for wind turbines. Ensuring compliance to all relevant quality standards
Mechanical Senior Technician (Wind Power)	Design, operation, control, monitoring and optimisation of gearboxes, hydraulic systems and wind turbine structural components
Senior Warranty Technician (Wind Power)	Combine engineering experience with strong business experience directly related to wind turbines. To be a customer interface for complex serious and detailed serial defects
Senior Blade Technician (Wind Power)	Apply stress analysis techniques to blades and composite components used in the development, manufacture, and repair of wind turbine blades
Control and Instrumentation Senior Technician (Wind Power)	Design, selection, installation and verification of sensors and related control systems, including total load control, turbine condition monitoring and other electronic asset protection systems
Technical Sales Specialist (Wind Turbine Components)	Interpret customer technical requirements, specifications and standards for all wind turbine systems. Provide in-service support, preparation of costings and quotes, managing customer relationships and contracts
Senior Process Technician (Wind Power)	Design, operation, control and optimisation of wind process plant, selection, installation of control systems. Compliance with sector specific quality and regulatory systems
Safety and Performance Senior Technician	Application of risk assessment methodologies to include HAZAN, HAZOP, FMEA, PSA
Senior Manufacturing Technician (Wind Power)	Development and optimisation of manufacturing systems, application of manufacturing codes and standards specific to large scale production of wind turbines and their components

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Pearson BTEC Level 4 HNC Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/8827/0	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8824/5	Pearson	120	480	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8831/2	Pearson	120	480	N/A

K4 - Foundation Degree FdEng Renewable Energy Technologies					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	N/A	Newcastle College Group	N/A	N/A	240

K5 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/8960/2	Pearson	120	480	N/A



## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdEng in Industrial Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Glyndwr University	240	N/A	N/A

K7 - HNC Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Teesside University	125	N/A	N/A

K8 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Teesside University	125	N/A	N/A

K9 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K10 - HNC Electromechanical Engineering (Renewable Energy Systems)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Teesside University	125	N/A	N/A

K11 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Teesside University	125	N/A	N/A

K12 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	University of Derby	N/A	N/A	240

K13 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	University of Sheffield	N/A	N/A	240

## Knowledge qualifications available to this pathway (cont.)

K14 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	603/0450/9	Pearson	120	480	N/A

K15 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	603/0451/0	Pearson	240	960	N/A

K16 - Pearson BTEC Level 5 HND Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	500/8825/7	Pearson	240	980	N/A

K17 - Pearson BTEC Level 5 HND Diploma in Operations Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	500/8959/6	Pearson	240	980	N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K17 provide underpinning knowledge for C1a - C1c and C2a - C2b**

The designated Foundation Degrees and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

**Progression from this pathway for those who have completed a Higher Apprenticeship in Advanced Manufacturing Engineering (Wind Generation):**

- progression to the Higher framework for Advanced Manufacturing - Level 6. Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in wind generation engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*



# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 10: Research and Development - no longer available to new starts

### Description of this pathway

Apprentices already registered on this pathway will be able to complete it, but it is no longer open for new starts.

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

No longer applicable

Job title(s)	Job role(s)
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*(no information)*

# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

*(no information)*

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
GCSE qualification in English (with enhanced functional content)	n/a	n/a

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
GCSE qualification (with enhanced functional content) in Mathematics	n/a	n/a

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

(no information)

# Progression routes into and from this pathway

N/A

UCAS points for this pathway:

*(no information)*

# Employee rights and responsibilities

N/A



## Level 4, Pathway 11: Marine

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Marine)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

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

There are no additional requirements other than the general entry requirements

Job title(s)	Job role(s)
Marine Systems Senior Mechanical Technician	Use diagnostic techniques to identify faults in marine plant, systems and components. Co-ordinate regular planned maintenance to improve serviceability and reduce downtime in production
Marine Senior Design Technician	Design of marine mechanical, structural systems for bespoke projects using design software. Create production drawings demonstrating regulatory compliance to customer specification
Marine Electrical / Electronic Senior Technician	Design, develop and manufacture electrical and electronic components and systems for marine based projects ensuring compliance with relevant quality and regulatory procedures
Marine Senior Quality Technician	Work with engineers to ensure quality programmes are appropriate, maintained and delivered within company procedures (ISO 14001 and 18001)
Marine Senior Production Technician	Supervise and provide technical guidance to production employees. Resolve technical and production issues within the company, sub-contractors and customers.

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Pearson BTEC Level 4 HNC Diploma in Marine Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	600/2080/5	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K2 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8831/2	Pearson	120	480	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8257/7	Pearson	120	480	N/A

K4 - Pearson BTEC Level 4 HNC Diploma in Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/8830/0	Pearson	120	480	N/A

K5 - Pearson BTEC Level 4 HNC Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/8827/0	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - Foundation Degree FdSc Subsea Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	N/A	Leeds University	N/A	540	240

K7 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Teesside University	125	N/A	N/A

K8 - HNC Instrumentation & Control Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Teesside University	125	N/A	N/A

K9 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K10 - HNC Mechanical and Computer Aided Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A

K11 - HNC in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	University of Central Lancashire (UCLAN)	120	N/A	N/A

K12 - Foundation Degree FdEng Marine Systems Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	University of Portsmouth	N/A	N/A	240

K13 - HNC Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Cornwall College	120	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree FdSc Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	University of Plymouth	N/A	N/A	240

K15 - Foundation Degree (FdSc) in Naval Architecture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Plymouth	N/A	N/A	240

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

K17 - Pearson BTEC Level 5 Higher National Diploma in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	603/0451/0	Pearson	240	960	N/A

## Knowledge qualifications available to this pathway (cont.)

K18 - Pearson BTEC Level 5 HND Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K18a	500/8834/8	Pearson	240	980	N/A

K19 - Pearson BTEC Level 5 HND Diploma in Electrical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K19a	500/8255/3	Pearson	240	980	N/A

K20 - Pearson BTEC Level 5 HND Diploma in Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K20a	500/8833/6	Pearson	240	980	N/A

K21 - Pearson BTEC Level 5 HND Diploma in General Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K21a	500/8825/7	Pearson	240	980	N/A



## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only (see below)**

**K1 - K21 provide underpinning knowledge for C1a - C1c and C2a - C2b**

The designated Foundation Degree and 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 that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 yrs old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing at level 6. Please note there is no Higher Apprenticeship at Level 5
- employment as a senior technician in marine engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met .**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 12: Space Engineering

### Description of this pathway

#### Higher Apprenticeship in Advanced Manufacturing Engineering (Space Engineering)

**18 to 24 years Level 4 Extended Diploma in Engineering Manufacture - Total minimum credit value = 347**

- Competence = 107
- Knowledge = 240

**25 years plus Level 4 Diploma in Engineering Manufacture - Total minimum credit value = 320**

- Competence = 80
- Knowledge = 240

### 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)
Software Engineer (Space Engineering)	Develop software code based on NI LabVIEW and TestStand in support of rf and microwave test systems. Reporting to the Software Manager. Involves ability to understand requirements and create derived specifications together with strong co-writing ability.
Hardware Engineer (Space Engineering)	Develop system designs for rf/microwave test systems based on customers specifications with ability to draw out key requirements. Knowledge of rf and microwave measurement is critical as is the ability to be able to understand the system aspects of the tasks. Reporting to the Technical Director.
Test Engineer (Space Engineering)	Has a strong background in rf and microwave testing with the ability to fault find to component level. Familiarity with NI LabVIEW and Test Stand is required. Reporting to the Manufacturing Manager. Will be involved with testing company products on bespoke test systems.
Manufacturing Technician (Space Engineering)	Reporting to the Manufacturing Manager - responsible for assembly of circuit boards, sub modules, modules and general assembly tasks to appropriate standards.
Test Technician (Space Engineering)	Reporting to the Test Manager - responsible for running test sequences using automatic, semi-automatic and manual test equipment and basic fault finding
Systems Engineer (Space Engineering)	Reporting to the Technical Director - responsible for system design including apportionment of technical specifications to unit, chain and complete transponder level



# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Foundation Degree in Space Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	Leicester University	N/A	N/A	240

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only**

**K1 provides underpinning knowledge for C1a - C1c and C2 - C2b - see \* above**

The designated Foundation Degree underpins the knowledge elements of the competence qualifications in this pathway. The knowledge qualification delivers essential underpinning knowledge which supports the fundamental scientific and mathematical principles that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of either of the Level 4 Extended Diplomas.

**\*Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

**Progression routes into the pathway include those who:**

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in space engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing (Aerospace - Level 6). Please note there is no Higher Apprenticeship at Level 5
- employment as a technician in space engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

## Level 4, Pathway 13: Rail Engineering

### Description of this pathway

Higher Apprenticeship in Advanced Manufacturing Engineering (Rail Engineering)

**18 to 24 years (Extended Diploma) - Total minimum credit value = 227**

- Competence = 107
- Knowledge = 120

**25 years plus (Diploma) - Total minimum credit value = 200**

- Competence = 80
- Knowledge = 120

### 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 Manager - Electrification & Plant Systems	Maintenance Managers will manage a maintenance group or supervise a number of teams engaged in maintenance, and asset management of E&P systems including electrical traction distribution, overhead line, or fixed plant
Installation Manager - Electrification & Plant Systems	Plan and deliver the installation of E&P systems equipment, including traction distribution, overhead line and fixed plant, ensuring resources are identified and utilised, documentation generated, plan and installation are monitored, for testing and commissioning.
Installation Manager (Signal Engineering)	Plan and deliver the installation of railway signalling equipment, ensuring resources are identified and utilised, documentation is provided to installation staff, and the achievement of the plan and installation are monitored, and the installation is handed over to testing and commissioning
Maintenance Manager (Signal Engineering)	Manage a maintenance group or supervise a number of teams engaged in maintenance, fault finding and asset management of signalling equipment.
Project Engineer (Signal Engineering)	Responsible for the effective use of signalling engineering resources within the project, which include directly employed staff, contractors, and sub-contractors. Advise on decisions effecting signalling systems.
Signalling Designer	Responsible for producing, integrated non-principles design details for relevant parts of a new or altered signalling system (or layout) confirming that it meets the requirements given in the scope of works and that the operational, technical and safety principles have been met.
Signal Testing & Commissioning Technician	Covers the role of undertaking the testing and inspection activities of signalling systems and equipment to provide suitable and sufficient evidence to confirm that they comply with the design specification, meet the requirements appropriate to the application and are fit for entry into service
Track Renewals Manager	Plan and deliver the installation or renewals of railway track, ensuring resources are identified and utilised, documentation is provided to renewals staff, and the achievement of the plan and quality of installation are monitored, and the worksite is handed over to traffic in line with procedures
Maintenance Manager (Track)	Manage a maintenance group or supervise a number of teams engaged in maintenance, and asset management of track.
Project Engineer (Track Engineering)	Responsible for directly employed staff, contractors, and sub-contractors. Advise the project manager on decisions effecting track. assess the impact of requested changes to the track design, and propose effective solutions in co-operation with the other engineering functions and the customer



Senior Technical Officer	Responsible for supporting either the track maintenance or renewals engineer by undertaking detailed surveys of track condition, undertaking detailed planning of maintenance or renewals activities, and completing quality management activities on site.
Track Designer	Responsible for producing, integrated non-principles design details for track layouts for new installations or renewals of existing track layouts confirming that it meets the requirements given in the scope of works and that the operational, technical and safety principles have been met.

# Qualifications

## Competence qualifications available to this pathway

C1 - Level 4 NVQ Extended Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	600/9529/5	City & Guilds	107	461	N/A
C1b	600/9576/3	EAL	107	461	N/A
C1c	601/1863/5	ETC Awards Ltd	107	461	N/A

C2 - *Level 4 NVQ Diploma in Engineering Manufacture					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/9486/2	EAL	80	338	N/A
C2b	601/1852/0	ETC Awards Ltd	80	338	N/A

## Knowledge qualifications available to this pathway

K1 - Foundation Degree FdEng Railway Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	N/A	Sheffield Hallam University	N/A	576	240

## Knowledge qualifications available to this pathway (cont.)

K2 - HNC Railway Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	N/A	Sheffield Hallam University	150	360	N/A

K3 - Pearson BTEC Level 4 HNC Diploma in Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8824/5	Pearson	120	480	N/A

K4 - Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/8831/2	Pearson	120	480	N/A

K5 - Pearson BTEC Level 4 HNC Diploma in Electrical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/8257/7	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K6 - Pearson BTEC Level 4 HNC Diploma in Operations Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	500/8960/2	Pearson	120	480	N/A

K7 - HNC Electrical & Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K7a	N/A	Teesside University	125	N/A	N/A

K8 - HNC Instrumentation & Control Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K8a	N/A	Teesside University	125	N/A	N/A

K9 - HNC Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K9a	N/A	Teesside University	125	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K10 - HNC Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K10a	N/A	Teesside University	125	N/A	N/A

K11 - HND Mechatronics					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K11a	N/A	Teesside University	240	N/A	N/A

K12 - HND Mechanical Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K12a	N/A	Teesside University	240	N/A	N/A

K13 - HND Mechanical Engineering by Flexible Open Learning					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K13a	N/A	Teesside University	240	N/A	N/A

## Knowledge qualifications available to this pathway (cont.)

K14 - Foundation Degree FdSc Mechanical and Manufacturing Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K14a	N/A	University of Derby	N/A	N/A	240

  

K15 - Foundation Degree FdEng Electrical and Electronic Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K15a	N/A	University of Derby	N/A	N/A	240

  

K16 - Foundation Degree (FdEng) Manufacturing Technology					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K16a	N/A	University of Sheffield	N/A	N/A	240

  

K17 - Pearson BTEC Level 4 Higher National Certificate in Engineering					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K17a	603/0450/9	Pearson	120	480	N/A

## Knowledge qualifications available to this pathway (cont.)

K18 - Foundation Degree (FdSc) in Computing						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	
K18a	N/A	Derby College	N/A	N/A	240	

## Combined qualifications available to this pathway

N/A

## Relationship between competence and knowledge qualifications

**\*Level 4 NVQ Diploma in Engineering Manufacture - for use by 25 years+ only**

**K1 - K18 provide underpinning knowledge for C1a - C1c and C2a - C2b - see \* above**

The designated Foundation Degree and Technical Certificates underpin the knowledge elements of the competence qualifications in this pathway. The knowledge qualifications deliver essential underpinning knowledge which supports the fundamental scientific and mathematical principles that equip apprentices with the understanding required to operate effectively and efficiently at a high level within this sub-sector.

Employers will select the knowledge qualification relevant to the job role of the Higher Apprentice. Note that Maths options must be included as part of the knowledge qualifications as this is a requirement of the job.

Higher Apprentices (age 18 to 24 years) must complete Level 4 NVQ Extended Diploma in Engineering Manufacture. However, if the relevant PEO units have already been achieved and certificated in a previous programme, for example applicants who have completed a Level 3 NVQ Extended Diploma as part of the Engineering Manufacture Level 3 framework, then they will be able to accredit these against the requirements of the Level 4 Extended Diploma.

**\* Note:** The Level 4 NVQ Diploma in Engineering Manufacture may be used by adult apprentices 25 years old and over, who must be able to demonstrate a practical ability comparable to 3 relevant practical PEO units at Level 2, along with the relevant health and safety training.

Assessment of the units in the competency qualification should be carried out in line with: '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 also be downloaded from Semta's website.

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.

# Transferable skills (England)

## Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	N/A
GCSE qualification in English (with enhanced functional content)	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

\* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

\*\* achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

## Inclusion of Information and Communications Technology (ICT)

N/A

# Progression routes into and from this pathway

## Progression routes into the pathway include those who:

- have A or AS levels in Science, Technology, Engineering or Mathematics subjects and GCSEs in English, Maths, and Science - grade C (new equivalent grade 4) or above
- have completed an Advanced Engineering Apprenticeship or have completed a 14 to 19 Advanced Diploma in Engineering or Manufacturing
- have previous work experience or employment in rail engineering at Level 3.

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

- progression to the Higher framework for Advanced Manufacturing at level 6. Please note there is no Higher Apprenticeship at Level 5
- employment as a senior technician in rail engineering in a variety of job roles and functions (see job roles).

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

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

[www.ucas.ac.uk/](http://www.ucas.ac.uk/)

[www.engc.org.uk/](http://www.engc.org.uk/)

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

## Professional recognition

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

[aerosociety.com/](http://aerosociety.com/)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org/](http://www.imeche.org/)

### **UCAS points for this pathway:**

*(no information)*

# Employee rights and responsibilities

N/A

**Please note that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.**

It is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that although Employee Rights and Responsibilities (ERR) no longer forms part of the formal certification requirements of a higher apprenticeship, that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies. See Additional Employer Requirements at the back of this framework for details.

*The remaining sections apply to all levels and pathways within this framework.*

## How equality and diversity will be met

Cogent Skills, Improve (NSA F&D), Semta, and formerly ProSkills, recognise the business benefits of having apprentices from a wide variety of diverse backgrounds to contribute to the talent pool. In particular the sector faces an aging workforce and the probability of skill shortages, therefore, we must look to attract new entrants from a much more diverse recruitment pool.

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

- Nuclear operations: Whilst nuclear operations are efficient, clean and has a good safety record, there is still a misconception this form of work is dirty and dangerous which acts as a deterrent. Staff turnover in companies that have nuclear operations is low.
- Process and Manufacturing Industries workforce historically has a poor image and a misconception that jobs in these industries are carried out in dark, dirty and potentially dangerous environments. On the contrary, nowadays Process and Manufacturing Industries are very high tech and largely controlled by sophisticated computer technology.
- Science, engineering and technology - women make up 50% of the labour market, yet they make up less than 20% of the labour market in science, engineering and technology despite the Women into Science and Engineering projects run in the past.

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.

As partners in this apprenticeship we are taking the following actions to help address these imbalances:

### **Cogent Skills**

- Introduced a series of industry specific case studies and Careers Pathways on the Cogent Careers web site ([www.cogentskills.com/careers](http://www.cogentskills.com/careers)) to encourage people from all backgrounds to enter the nuclear industry
- Works very closely with the National Skills Academy for Nuclear to promote various initiatives such as Energy Foresight within schools ([www.nuclear.nsacademy.co.uk](http://www.nuclear.nsacademy.co.uk))
- Regularly supports regional/ national careers fairs/ skills events to promote apprenticeships,

providing an ideal opportunity to address issues faced by women and ethnic minorities

- Works with representative groups such as the United Kingdom Resource Centre, engaging with their Women in Science and Engineering Work programmes.

### **Improve (now called NSA Food & Drink)**

- Ongoing monitoring of data to identify any issues and intervene where necessary
- Developing careers materials that are accessible to all
- Identifying a process to make it easier for potential apprentices to gain information, e.g. via web site.

### **ProSkills**

Proskills has now ceased trading but its activities have now moved to relevant Trade Bodies and other organisations to continue to raise the profile and set the skills standards and qualifications for the process and manufacturing sector, and ensure that the skills system delivers against the current and future needs of the industries it represents. The process and manufacturing sector is full of exciting and rewarding career opportunities.

### **Semta**

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

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

Semta as the Issuing Authority expects providers and employers to comply with the Equality Act 2010 to ensure that applicants are not discriminated against in terms of entry to and promotion within, the sector using the 9 protected characteristics of:

1. Age
2. Disability
3. Gender
4. Gender reassignment

5. Marriage and civil partnerships
6. Pregnancy and maternity
7. Race
8. Religion and Belief
9. Sexual orientation

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 the implementing of 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/](http://www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/)

# On and off the job guided learning (England)

## Total GLH for each pathway

N/A - GLH does not apply to Higher Apprenticeship frameworks

## Evidence requirements for claiming an Apprenticeship Certificate

The Apprenticeships, Skills, Children and Learning Act (ASCL) was enacted in November 2010 and the new certification requirements came into force on the 13th April 2011. One of the key requirements of the Act is that only the Certifying Authority for England can issue apprenticeship certificates to successful apprentices in England.

In order to make this happen the Federation for Industry Sector Skills & Standards (Fisss) has been designated the Certifying Authority in England. Certification applications are made through the Apprenticeship Certificates England (ACE) on-line system using the Apprentice Declaration and Authorisation form V3 which is available from the Federation for Industry Sector Skills and Standards (Fisss) website: [acecerts.co.uk/](http://acecerts.co.uk/)

## Minimum off-the-job guided learning hours

N/A

## How this requirement will be met

N/A

## Minimum on-the-job guided learning hours

N/A

## How this requirement will be met

N/A

# Personal learning and thinking skills assessment and recognition (England)

## Summary of Personal Learning and Thinking Skills

N/A

### Creative thinking

N/A

### Independent enquiry

N/A

### Reflective learning

N/A

### Team working

N/A

### Self management

N/A

### Effective participation

N/A

# Additional employer requirements

## Employee Rights and Responsibilities

ERR does not form part of the formal certification requirements of this Higher Apprenticeship, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met. However, it is strongly recommended by the Advanced Manufacturing Higher Apprenticeship Steering Committee that that apprentices between the ages of 18 to 24 who have not been previously employed should undertake ERR. This should be integrated into the formal induction that all employed status apprentices should receive within their companies.

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

### Method 1 - Qualifications

**1a.** EAL have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements.

Qualification details:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors

Qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

**1b.** Pearson have produced a stand-alone qualification that can cover all 9 outcomes of ERR requirements if Unit 2 is achieved.

Qualification details:

Pearson BTEC Level 2 Award in WorkSkills for Effective Learning and Employment

Qualification ref no: 501/1793/2

Credit value: 4 credits

Guided learning hours: 40

**Please note:** The Pearson BTEC Level 2 Award consists of a mandatory unit as an introduction to apprenticeships. Apprentices **must then complete Unit 2** which covers the ERR requirements (included within content). This qualification is designed to be assessed in the context of the sector relevant to the apprenticeship framework being undertaken (i.e. manufacturing/engineering in this case).

## NOTE

**This ERR qualification expires on the 30/04/2018 and will no longer be available to learners from 01/05/2018**

**1c.** Pearson have produced a Level 3 stand-alone qualification that can cover all 9 outcomes of ERR requirements if Units 2 and 4 are achieved.

Qualification details:

Pearson BTEC Level 3 Award in WorkSkills for Effective Learning and Employment

Qualification ref no: 501/1791/9

Credit value: 4 credits

Guided learning hours: 40

The Pearson BTEC Level 3 Award consists of a mandatory unit as an introduction to apprenticeships. Apprentices **must then complete Units 2 and 4** which cover the ERR requirements (included within content). This qualification is designed to be assessed in the context of the sector relevant to the apprenticeship framework being undertaken (i.e. manufacturing/engineering in this case).

**Please note:** Only Level 2 is required to meet the framework requirements.

## NOTE

**This ERR qualification expires on the 30/04/2018 and will no longer be available to learners from 01/05/2018**

**1d.** 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

Qualification ref no: 600/2819/1

Credit value: 2 credits

Guided learning hours: 15

**Please note:** Although it may be possible to complete ERR in a minimum of 15 Guided learning hours (GLH), Semta recommend a minimum of 40 GLH are taken to complete the ERR requirements.

These qualifications 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 qualifications will have demonstrated that they have the underpinning knowledge relevant for the engineering/manufacturing environment which

satisfies the Specification for Apprenticeship Standards for England.

## Method 2 - Workbook

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

[customercare@eal.org.uk](mailto: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.

**Please note:** that ERR does not form part of the formal certification requirements of the Higher Apprenticeship in England, so a candidate who does not achieve ERR can still be certified providing the formal certification criteria have been met.

To claim certification of ERR, one of the preceding forms of ERR evidence will be required, together with the Apprentice Declaration and Authorisation form V3 which is available from the Federation for Industry Sector Skills and Standards (Fisss) website: [acecerts.co.uk/](http://acecerts.co.uk/)

## Routes to Engineering Technician and Incorporated Engineer Registration

Those who use this framework should be, and in many cases are, aware of the significant opportunities that exist to gain accreditation at Engineering Technician or Incorporated Status within the professional institutions.

The Institution of Engineering and Technology (IET), Institution of Mechanical Engineers (IMechE) and the Royal Aeronautical Society (RAeS) view all components of the framework as necessary to contributing to the apprentices development of the necessary skills, knowledge, competence and commitment. Starting with basic skills learning of NVQ Level 2 (PEO2 within the NVQ Level 4 Extended Diploma), a Foundation degree/HNC/D with its work-based learning, Functional or Key Skills at Level 2 and ERR.

The IET /IMechE Professional Review is the assessment procedure for registration with the Engineering Council UK. Following the submission of an application form, the Professional Review comprises of an assessment of academic qualifications, the proposer's forms and the evidence summary. For applicants seeking Incorporated Engineer registration the process is then completed by an interview. Applicants seeking Eng Tech registration may be called for interview if the details on the application form do not provide sufficient evidence for a decision

to be made.

The Professional Review interviewers make a holistic assessment of professional competence and provide applicants with an opportunity to expand on the information within their applications. Applicants are given the opportunity to demonstrate their commitment to the profession, to Continuing Professional Development (CPD) and other codes of conduct. Following the interview, a report is sent the Membership Committee for final assessment.

The Membership Committee carries out the final stage of the assessment. Representatives are drawn from a cross section of the engineering industry and consider a large number of applications. They review evidence from statements describing the applicant's current position, professional experience, the qualifying report on professional development, the interview report and reports from supporters.

Higher Apprentices will be encouraged to become Associate Members of IMechE, IET and RAeS when they start their apprenticeship, in order to gain help and support from the Professional Institutions during their journey to registration.

Useful websites:

[www.engc.org.uk/](http://www.engc.org.uk/)

[www.engc.org.uk/professional-registration/standards/uk-spec](http://www.engc.org.uk/professional-registration/standards/uk-spec)

[www.theiet.org/](http://www.theiet.org/)

[www.imeche.org](http://www.imeche.org)

### **Personal Learning and Thinking Skills (PLTS)**

These no longer form part of the certification requirements for a Higher Apprenticeship and are covered in broad context within the competence and knowledge qualifications.

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apprenticeship  
FRAMEWORKS ONLINE

For more information visit  
[www.afo.sscalliance.org](http://www.afo.sscalliance.org)