**Welsh** **Apprenticeship Pathways**

**in**

**Scientific Technologies Level 3 & Level 4**

The content of this Pathway has been agreed by Cogent . This is the only Apprenticeship Pathway in the Life Science sector approved for use in Wales that is eligible for Welsh Government funding.

**Contents**

[Learning Programme Content](#Learning)

[Entry Requirements](#Entry)

[Apprenticeship Pathway Learning Programme(s)](#Pathway)

* Level 3 – Scientific Technologies - Laboratory and Associated Technical Activities - (Education Science)
* Level 3 – Scientific Technologies - Laboratory and Associated Technical Activities (Industrial Science)
* Level 4 – Scientific Technologies - Life Science Technician
* Level 4 - Scientific Technologies - Chemical Science Technician
* Level 4 – Scientific Technologies - Food Science Technician
* Level 4 - Scientific Technologies - Process Technician

[Other Additional Requirements](#Other)

[Job Roles](#Job)

[Progression](#Progression)

[Equality & Diversity](#Equality)

[Employment Responsibilities and Rights](#ERR)

[Responsibilities](#Responsibilities)

**LEARNING PROGRAMME CONTENT**

The Learning Programme provision shall comprise of three mandatory elements:

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

The total minimum credit value required for the Level 3 Pathways:

Pathway 1: Laboratory and Associated Technical Activities - (Education Science) is 91Credits

Pathway 2: Laboratory and Associated Technical Activities (Industrial Science) is 103 Credits

The total minimum credit value required for the Level 4 Pathways:

Pathway 1: Life Science Technician is 192 Credits

Pathway 2: Chemical Science Technician is 192 Credits

Pathway 3: Food Science Technician is 192 Credits

Pathway 4: Process Technician is 192 Credits

**ENTRY REQUIREMENTS**

**Level 3 Pathways:**

Science sector employers wish to attract applicants who have an interest in working in a

Science environment and would be interested in applicants that:

* are keen and motivated to work in a science environment
* are willing to undertake a course of extended training in a work environment on-the-job and off-the-job
* have had previous work experience or employment in the sector
* have a Welsh Baccalaureate with or without a science core option
* have GCSEs in English, Mathematics, and Science grades (A to E)

The Laboratory and Science Technician Level 3 Apprenticeship is suitable for applicants who

have five GCSEs grade C or above including Maths, English, and a Science. This is not a hard

and fast rule but may vary according to the pathway chosen and the suitability of individual

applicants.

Applicants wishing to undertake a BTEC Level 4 HNC Diploma underpinning knowledge

qualification should already have achieved a Technical Certificate at Level 3, A Levels or

equivalent in the relevant subject area and be age 18+.

The Science sector does not impose restrictions to entry, such as minimum level of

qualifications and welcomes applicants from a range of diverse backgrounds and

anticipates that applicants will have a wide range of experience, achievements and

qualifications.

The selection process on behalf of employers may include initial assessment activity where

applicants may be asked if they have qualifications or experience that can be accredited

against the requirements of the apprenticeship. Applicants may also be required to take

tests in basic numeracy, literacy, communication skills and spatial awareness. There may

also be an interview to ensure potential apprentices have selected the right occupational

sector to meet their needs and expectations and those of their employer.

To avoid the need to repeat qualifications processes exist to make sure that applicants with

prior knowledge, qualifications and or experience are not disadvantaged by having to

repeat learning. The Welsh Baccalaureate with its Core programme of personal learning and

development studies along with options such as, Vocational Qualifications and Principal

Learning could provide significant opportunities for accreditation of Prior Learning against

The components of this framework. The same processes can be applied to GCSEs. Training

providers/Colleges should be able to advise entrants on the potential reduction in

programme duration that could result from accrediting previous qualifications and

experience.

**Initial Assessment:**

Training providers, Colleges and employers will use initial assessment to ensure that applicants

have a fair opportunity to demonstrate their ability and to tailor programmes to meet

individual needs, recognising prior qualifications and experience.

**Accreditation of Prior Learning:**

Applicants already working in the sector will be able to have their prior experience

recognised by the awarding organisation and this will count towards the competence,

knowledge and Essential Skills Wales qualifications in this framework.

**Knowledge qualifications:**

If applicants already have one of the Level 3 or Level 4 knowledge qualifications before they

started their Apprenticeship (see knowledge qualifications page in this framework), they can

count this and do not have to redo the qualification, providing that they have achieved this

qualification within 5 years of applying for the apprenticeship certificate. For example, they

may have already achieved the knowledge element as part of the Welsh Baccalaureate.

The hours they spent gaining this qualification will also count towards the minimum hours

Required for this framework.

**Competence qualifications**

If applicants already have the Level 3 or Level 4 competence qualification for the

Apprenticeship they do not have to repeat this qualification. However, this qualification must

have been achieved within 5 years of applying for the apprenticeship certificate and they

will still have to demonstrate competence in the workplace.

**Level 4 Pathways:**

The Level 4 Apprenticeship is open to all people employed and who can demonstrate

that they have the aptitude and potential to achieve the relevant Foundation Degree, HND

Diploma or HNC Diploma in a technical discipline. Whilst the framework does not prescribe

the entry qualifications for the Level 4 Apprenticeship, as a general guide to the level

of the Foundation Degree, HND Diploma or HNC Diploma the applicants should be:

* Progressing from the Level 3 Apprenticeship in a related scientific discipline or
* At the start of their Apprenticeship have achieved at least 200 points at A/AS level

including DD at GCE A2 for two Science subjects, including the science subject which

is the main component of the Foundation Degree, HND Diploma or HNC Diploma; and

at least 5 GCSE’s including Maths, English and 3 other subjects at C or above. 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 equivalent

that would allow them entry to Higher Education at Level 6. Learners who have

completed the Welsh Baccalaureate may have completed units or short courses

which will provide underpinning knowledge towards the Level 4 Apprenticeship.

For the Level 4 Apprenticeship there are no minimum entry or previous experience

requirements. The programme shall allow equal access to all applicants. Due to the

competition for places the following skills and attributes relevant to working within the

industries and services that use chemical science, life sciences, food science,

process/product development or healthcare science may be considered as part of the

application process;

* Motivation to succeed within the industry.
* Willingness to adhere to employer/training provider terms and conditions of employment.
* Demonstrable commitment and awareness of the demands of the Level 4 Apprenticeship.
* Willingness to learn and apply that learning in the workplace.
* Ability to demonstrate that they have the potential to complete the qualifications which are part of the Level 4 Apprenticeship.
* Willingness to work with due regard to Health and Safety of self and others.
* Willingness to communicate effectively with a range of people.

All Level 4 Apprenticeship applicants should be aware of the varied working

conditions that may include;

* Working with high hazard chemicals
* Exposure to bio-hazards
* Working with members of the public
* Working with a number of different departments
* Working as part of a team or unsupervised
* Working in a high security environment
* Wearing personal protective clothing.

**APPRENTICESHIP PATHWAY LEARNING PROGRAMME(S)**

**Level 3**:

**Qualifications**

Participants must achieve one of the following competence and knowledge qualification(s) below.

|  |
| --- |
| Level 3 - NVQ Diploma in Laboratory and Associated Technical Activities  |
| Awarding Body | Qualification No. | Credit Value | Total Qualification Time | Competence / Knowledge / Combined | QualificationAssessmentLanguage(s) |
| Pearson | 600/1731/4 / C00/0354/6 | 48 | 480 | Competence | English Only |
| BTEC Level 3 National Certificate in Applied Science |
| Pearson | 601/7434/1 /C00/0775/1  | 24 | 235 | Knowledge | English Only |
| BTEC Level 3 National Extended Certificate in Applied Science |
| Pearson | 601/7436/5 /C00/0775/3  | 46 | 455 | Knowledge | English Only |
| BTEC Level 3 National Diploma in Applied Science |
| Pearson | 601/7435/3 / C00/0775/2 | 89 | 890 | Knowledge | English Only |
| BTEC Level 3 National Foundation Diploma in Applied Science |
| Pearson | 601/7438/9 /C00/0775/4  | 64 | 640 | Knowledge | English Only |
| Pearson BTEC Level 4 Higher National Certificate in Applied Sciences |
| Pearson | 603/4570/6 /C00/4037/4  | 120 | 1200 | Knowledge | English Only |
| GQA PAA\VQ-SET Level 3 Certificate in Laboratory Technical Skills |
| GQA | 600/1545/7 / C00/0331/0 | 25 | 250 | Knowledge | English Only |

**Essential Skills Wales (ESW)**

Essential Skills Wales qualifications assessment languages are English-Welsh

|  |  |  |
| --- | --- | --- |
| Level 3: Pathway 1: Laboratory and Associated Technical Activities - (Education Science)  | Level | Minimum Credit Value |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |
| Level 3: Pathway 2: Laboratory and Associated Technical Activities (Industrial Science) |  |  |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |

**On/Off the Job Training**

|  |  |  |
| --- | --- | --- |
| Pathway | Minimum On the Job Training Hours | Minimum Off the Job Training Hours |
| Level 3 Pathway 1: Laboratory and Associated Technical Activities - (Education Science) | 480  | 430 |
| Level 3 Pathway 2: Laboratory and Associated Technical Activities (Industrial Science) | 480 | 430 |

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

|  |
| --- |
| Pathway 1:Competence qualification - 48 credits & Knowledge qualification -25 creditsThe total amount of training hours - which includes both on and off-the-job learning for this Pathway is 730 training hours.Pathway 2:Competence qualification - 60 credits & Knowledge qualification -25 creditsThe total amount of training hours - which includes both on and off-the-job learning for this Pathway is 730 training hours.*(Please note this included 180 Hours off-the-job for the Essential Skills Units)*  |

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

|  |
| --- |
| * 6 credits / 45 GLH Level 1 Essential Skills Wales Communication
* 6 credits / 45 GLH Level 1 Essential Skills Wales Application of Number
* 6 credits / 45 GLH Level 1 Essential Skills Wales Digital Literacy
 |

**Level 4**: Apprenticeship in Scientific Technologies

**Qualifications**

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

|  |
| --- |
| Level 4 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) |
| Awarding Body | Qualification No. | Credit Value | Total Qualification Time | Competence / Knowledge / Combined | QualificationAssessmentLanguage(s) |
| GQAPAA\PAAVQSET | 501/2291/5 /C00/1027/3  | 54 | 540 | Competence | English Only |
| Pearson | 600/1733/8 /C00/0354/7  | 54 | 540 | Competence | English Only |
| Pearson BTEC Level 4 Higher National Certificate in Applied Sciences |
| Pearson | 603/4570/6 /C00/4037/4  | 120 | 1200 | Knowledge | English Only |
| Pearson BTEC Level 5 Higher National Diploma in Applied Science |
| Pearson | 603/4574/3 /C00/4037/5  | 240 | 2400 | Knowledge | English Only |

**Essential Skills Wales (ESW)**

Essential Skills Wales qualifications assessment languages are English-Welsh (*see example below)*

|  |  |  |
| --- | --- | --- |
| Level 4 Apprenticeship:  | Level | Minimum Credit Value |
| Pathway 1: Life Science Technician |  |  |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |
| Level 4 Apprenticeship Pathway 2: Chemical Science Technician |  |  |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |
| Level 4 Apprenticeship Pathway 3: Food Science Technician |  |  |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |
| Level 4 Apprenticeship Pathway 4: Process Technician |  |  |
| Communication | 2 | 6 |
| Application of Number | 2 | 6 |
| Digital Literacy | 2 | 6 |

**On/Off the Job Training**

|  |  |  |
| --- | --- | --- |
| Pathway | Minimum On the Job Training Hours | Minimum Off the Job Training Hours |
|  Level 4: Apprenticeship Pathway 1: Life Science Technician | 540 | 1380 |
| Level 4: Apprenticeship: Pathway 2: Chemical Science Technician | 540 | 1380 |
| Level 4: Apprenticeship Pathway 3: Food Science Technician | 540 | 1380 |
| Level 4: Apprenticeship Pathway 4: Process Technician | 540 | 1380 |

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

|  |
| --- |
| Pathway 1:Competence qualification - 54 credits & Knowledge qualification -120 creditsThe total amount of training hours - which includes both on and off-the-job learning for this Pathway is 1924 training hours.Pathway 2:Competence qualification - 54 credits & Knowledge qualification -120 creditsThe total amount of training hours - which includes both on and off-the-job learning for this Pathway is 1924 training hours.Pathway 3:Competence qualification - 54 credits & Knowledge qualification -120 creditsThe total amount of training hours - which includes both on and off-the-job learning for this Pathway is 1924 training hours.Pathway 4:*Competence qualification - 54 credits & Knowledge qualification -120 credits**The total amount of training hours - which includes both on and off-the-job learning for this Pathway is 1924 training hours.**(Please note this included 180 Hours off the-job for the Essential Skills Units)*  |

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

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

**OTHER ADDITIONAL REQUIREMENTS**

|  |
| --- |
| *None*  |

**JOB ROLES**

The latest version of the job roles and job descriptions for this Pathway can be found here

[**https://cogentskills.com/membership/sip/sip-careers-outreach**](https://cogentskills.com/membership/sip/sip-careers-outreach)

**Level 3**

Pathway 1:

* Laboratory Technician Education Science (General)
* Laboratory Technician Education Science (Maintenance)

Pathway 2:

* Laboratory Technician (Health physics)
* Laboratory Analysis Technician (Environmental Science)
* Laboratory Technician (Process)
* Laboratory Technician (Standards)
* Laboratory Technician (Maintenance)
* Laboratory Researcher / Technician

**Level 4**

Pathway 1:

* Life Science Technician

Pathway 2:

* Chemical Science Technician

Pathway 3:

* Food Science Technician

Pathway 4:

* Process Technician

**PROGRESSION**

**Progression routes into the Level 3 Apprenticeship:**

The majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as work experience. Others may have worked in the science sector for a period before considering an apprenticeship.

**Progression from** **the Level 3 Apprenticeship:**

It is likely that successful apprentices will take up laboratory technician positions

in industrial, pharmaceutical, petrochemical and nuclear companies carrying out a wide variety of technician job roles. In most cases these will be of a supervisory nature carrying out routine and non routine activities.

Opportunities to undertake Further and Higher education are likely especially apprentices who complete the BTEC Level 3 Diploma in Applied Science, apprentices may have the opportunity to progress onto level 4/5 science related qualifications, which could provide access to a wide range of science related university courses.

**Progression routes into the Level 4 Apprenticeship:**

The Level 4 Apprenticeship is open to all people employed and who can demonstrate that they have the aptitude and potential to achieve the relevant Foundation Degree, HND Diploma or HNC Diploma in a technical discipline. Whilst the framework does not prescribe the entry qualifications for the Level 4 Apprenticeship, as a general guide to the level of the Foundation Degree, HND Diploma or HNC Diploma the applicants should be:

* Progressing from the Advanced Level Apprenticeship in a related scientific discipline

or

* At the start of their Apprenticeship have achieved at least 200 points at A/AS level including DD at GCE A2 for two Science subjects, including the science subject which is the main component of the Foundation Degree, HND Diploma or HNC Diploma; and at least 5 GCSE’s including Maths, English and 3 other subjects at C or above. 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 equivalent that would allow them entry to Higher Education at Level 6. Learners who have completed the Welsh Baccalaureate may have completed units or short courses which will provide underpinning knowledge towards the Level 4 Apprenticeship.

For the Level 4 Apprenticeship there are no minimum entry or previous experience

requirements. The programme shall allow equal access to all applicants. Due to the

competition for places the following skills and attributes relevant to working within the

industries and services that use chemical science, life sciences, food science, process/product development or healthcare science may be considered as part of the application process:

* Motivation to succeed within the industry.
* Willingness to adhere to employer/training provider terms and conditions of employment.
* Demonstrable commitment and awareness of the demands of the Level 4 Apprenticeship.
* Willingness to learn and apply that learning in the workplace.
* Ability to demonstrate that they have the potential to complete the qualifications which are part of the Level 4 Apprenticeship.
* Willingness to work with due regard to Health and Safety of self and others.
* Willingness to communicate effectively with a range of people.

All Level 4 Apprenticeship applicants should be aware of the varied working conditions that may include;

* Working with high hazard chemicals
* Exposure to bio-hazards
* Working with members of the public
* Working with a number of different departments
* Working as part of a team or unsupervised
* Working in a high security environment
* Wearing personal protective clothing.

**Progression routes from the Level 4 Apprenticeship:**

Following completion of this Level 4 Apprenticeship there are several options open to the successful candidate who wishes to continue their development in order to progress their career. There are opportunities to continue to undertake further vocational training or academic qualifications. These may include (but are not exclusive to) the following:

Career Progression

* Undergraduate Degrees in Chemical Science or a related discipline.
* Diplomas in Science or a related discipline.
* Progression to an honours degree through part-time study with work-based learning.

Continuing Professional Development

* Develop their career in coaching through Assessor and Verifier Awards.
* Qualifications in a related area, including (but not limited to) Health & Safety, Training &
* Development, Business Improvement Techniques and Supervisory Management.
* Membership of a professional institution at Registered Science Technician level (Further information available at [www.professionalregisters.org](http://www.professionalregisters.org))

**EQUALITY & DIVERSITY**

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

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

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

|  |
| --- |
| Barriers:In the industries and services where there are micro or small to medium enterprises, such asin Biotechnology where 99% of all employers are made up such enterprises, some of theseemployers cannot cover the range of services that the large employer can cover.There is no defined entry route below graduate into the Life Science industry. Careers advice regarding entry into this particular industry is often poor.The well-established practice of recruiting graduates into technician roles means that there is low awareness amongst employers of the potential benefits of developing technicians and science professionals though an apprenticeship route, which limits the diversity of thetechnician intake.The role of science technician may be perceived to be less valued than that of the graduate scientist and therefore is seen as a less attractive career option, which limits the diversity of the cohort attracted to the science technician profession.Actions:Introduction of the Level 4 Apprenticeship framework.Cogent plan to introduce a series of industry specific case studies and Careers Pathways on the Cogent Careers web site (https://cogentskills.com/membership/sip/sip-careers-outreach) aimed at encouraging people from all backgrounds to become life sciences, chemical science, process/packaging development and healthcare science professionals. These case studies will also demonstrate the benefits to employers of using the Level 3 Apprenticeship and Level 4 Apprenticeship as a means to improving the diversity of the laboratory, scientific and technical workforce. |

**[EMPLOYMENT RESPONSIBILITIES AND RIGHTS (ERR)](#ERR)**

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

**RESPONSIBILITIES**

It is the responsibility of the Training Provider and Employer to ensure that the requirements of

this pathway are delivered in accordance with the Welsh Government Apprenticeships

Guidance.

**Further information may be obtained from:**

Welsh Government

**DfES-ApprenticeshipUnit@gov.wales**