apprenticeship
FRAMEWORK

Laboratory and Science Technicians (Wales) Non Statutory

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Apprenticeships

Laboratory and Science Technicians (Wales) Non Statutory

Information on the Publishing Authority for this framework:

SEMTA

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

Issue number: 1	This framework includes:
Framework ID: FR00432	Level 2 Level 3
Date this framework is to be reviewed by: 01/03/2012	This framework is for use in: **Wales**

Short description

Laboratory and science technicians cover a broad range of occupational roles from those who support scientists and engineers in research and development work to those who provide quality assurance or analytical science services. They can also be found in schools, colleges and universities supporting teachers of science and technical learning.

This framework is based on a previous framework for Laboratory Technicians jointly issued by Cogent and Semta. It is designed for laboratory and science technicians who carry out routine laboratory and science based operations and those involved in non-routine, more varied work activities such as planning, organising and leading technician support functions to assist scientists, educationalists and technologists in their work.

Contact information

Proposer of this framework

This framework is published by Semta and Cogent on a non statutory basis prior to the designation of

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Purpose of this framework

Summary of the purpose of the framework

The contribution that good laboratory and science technicians could make to science companies operating in the United Kingdom is being hampered by the scarcity of people with the necessary practical and theoretical skills to be effective. Over the years employers have developed an increasing reliance on university graduates to fill these technician roles; this has been recognised as being neither cost effective nor sustainable.

In consultation with UK science employers, Semta has (leading on behalf of other interested SSCs such as Cogent) scoped, designed and developed new suites of National Occupational Standards and related qualifications for which there is a strong emerging market from employers.

This framework has been written as a shared framework between Semta who look after science, engineering and manufacturing and Cogent who cover chemicals, pharmaceuticals, nuclear, oil, gas, petroleum and polymer industries. It builds on Cogent and Semta's previous joint framework for laboratory technicians and has been written in response to significant interest by employers in the use of non-graduate technicians in these support roles. The framework is designed for laboratory and science technicians who carry out both routine and one-off laboratory testing and perform a variety of technical support functions to help scientists, technologists and others with their work. It is also for technicians who help teachers/lecturers in the delivery of science education.

The specific nature of each laboratory and science technician job role will vary according to the needs of the employer, but apprentices could work in the following areas: research and development, scientific analysis and testing or education and industry. Technicians are employed in a wide range of scientific fields that impact almost every aspect of our lives. They could be involved in helping to diagnose disease by supporting medical specialists in a hospital or health clinic environment or checking products in the food, drink or pharmaceutical industries. They are frequently called upon to set up equipment and experiments that support teachers and lecturers who teach biology, chemistry, physics and other scientific subjects.

The framework is designed to meet the needs of a broad range of employers and industries where laboratory and science technicians' roles are needed. Some key facts about these industries are given below:

Semta and Cogent research for the Pharmaceutical (R&D) (SIC Code 24.4), Manufacture of Medical & Surgical equipment & orthopaedic appliances (SIC Code 33.10) and Science & Engineering R&D (SIC Code 73.10), shows there are:

- Approximately 191,000 employees and 6,500 employers across four nations (England 87%, Scotland 7%, Wales 4% & Northern Ireland 2%).

The following characteristics are anticipated (2010-2016):

- Increase of 15,000 people employed in the sector (1.3% average growth rates per annum)
- Net requirement for 50,000 people to cover employment growth and retirements within the sector
- Estimated net requirement of 9,300 associated professionals (technicians)
- Cogent research on the future of skills in the Life Science and Pharmaceuticals sectors (December 2009) found that the most critical and hard-to-fill occupations are those of a scientific and technical variety
- The industry absorbs 460 scientific graduates each year – mainly chemical and biological sciences, this reducing supply needs to be targeted at high level roles
- 45% of graduates are in occupations for which they are over-qualified, Semta research suggests many of these are working in technician roles

The HEaTED project found that there will be a significant demand for new laboratory and science technicians. These technician support roles are vital to schools, FE and HE teaching and learning in the UK. The demand for these new technicians is likely to number in the thousands over the next five to ten years.

Other sectors that are likely to benefit from this framework include:

- Chemicals
- Petro-chemicals
- Public and private health care
- Animal and marine science
- Nuclear
- Pharmaceuticals
- Waste disposal
- Mining, quarrying and extractives
- Building and construction support services
- Ecological/environmental science
- Metallurgy science
- Food science and hygiene
- Agriculture science

The framework provides employers and apprentices the opportunity to gain the skills and experience that are needed for a job as a laboratory technician or science technician role. It also enables/contributes to career progression including access to additional Further or Higher Education programmes/qualifications. For employers, the framework will provide a cost-effective process for increasing and sustaining the overall numbers of laboratory

technicians.

Aims and objectives of this framework (Wales)

The aim of this framework is to attract, retain and develop apprentices who wish to become laboratory technicians at Foundation Level 2 and Apprentice Level 3, more specifically:

- to contribute towards meeting the recruitment and retention issues faced by the sectors employers
- to provide a range of Laboratory and Science Technician pathways and job functions suitable for employers' requirements
- increase the technical capability of laboratory and science technicians in general
- encourage the participation of non-graduates in laboratory and science technician job roles
- increase retention among laboratory technicians and associated groups
- improve productivity and profitability (GVA per employee)
- increase the overall level of apprenticeship participation in the science sector
- help maintain diversity within the workforce

Entry conditions for this framework

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)
- Have completed a Pathways to Apprenticeship programme

As a guide, the Laboratory and Science Technician Foundation Apprenticeship is suitable for applicants who have five GCSEs grade D or E or above including Maths, English and a Science.

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.

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 NVQs, Vocational Qualifications and Principle 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.

Please note: although there are no relaxation rules that apply to Essential Skills Wales (ESW) the extension of Essential Skills Wales applies equally to certain qualifications on entry.

Applicants who have registered on Key skills qualifications before the 31st August 2010 and achieve before the 31st august 2011 can use them for framework completion. Applicants who start a new apprenticeship framework issued after September 2010 but who already either: hold a key skills qualification in the particular ESW skill and at the correct level; or who are registered on a Key Skills qualification and will achieve by the 31st august 2011; will have the KS achievement recognised against the ESW requirement. Please note: there are no proxies, exemptions or relaxation allowances for ESW.

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 2 or Level 3 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 2 or Level 3 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.

Essential Skills Wales

If applicants already have GCSEs in English and Maths they still have to achieve the Essential Skills Wales (ESW) at the relevant level as these are new qualifications and proxies do not exist. Up to the 31 August 2011, if applicants already have achieved Key Skills at the relevant level, they will not have to do the relevant Essential Skills Wales, however, apprentices can be encouraged to complete ESW at a higher level if appropriate.

Level 2

Title for this framework at level 2

Foundation Apprenticeship for Laboratory and Science Technicians

Pathways for this framework at level 2

Pathway 1:	Laboratory and Associated Technical Activities - (Education Science)
Pathway 2:	Laboratory and Associated Technical Activities (Industrial Science)
Pathway 3:	Laboratory Science (Compound Analysis)
Pathway 4:	Laboratory Science (Clinical Analysis)

Level 2, Pathway 1: Laboratory and Associated Technical Activities - (Education Science)

Description of this pathway

Laboratory and Associated Technical Activities (Education Science) Total minimum credit value = 66 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician Education Science (General)	Prepare resources and set up scientific equipment for School / College / University experimentation
Laboratory Technician Education Science (Maintenance)	Maintain scientific equipment and resources used for experimentation

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 2 NVQ Certificate in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1868/7	PAA\VQ-SET (Education Science Pathway)	31	214	N/A

C2 - Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1664/4	Edexcel (Education Science Pathway)	31	214	N/A

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 2 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6671/7	Edexcel	60	360	N/A

K2 - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/7453/2	Edexcel	30	180	N/A

Knowledge qualifications available to this pathway(cont.)

K3 - Edexcel BTEC Level 2 Extended Certificate in Engineering (Specialist: Applied Science) (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8250/4	Edexcel	30	180	N/A

K4 - PAA\VQ-SET Level 2 Certificate in Laboratory Technical Skills (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	600/1546/9	PAA\VQ-SET	17	115	N/A

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a - K4a provide underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific principles to equip apprentices with the basic understanding required to operate effectively and efficiently in the industry.

In this pathway the units selected from the knowledge-based qualifications should ideally be delivered in an educational workplace context such as an education laboratory.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 1	6
Application of numbers	Level 1	6
IT	Level 1	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up positions in education establishments such Schools, Colleges and Universities as laboratory or science technicians working to support senior teachers and lecturers in setting up and running educational experiments and carrying out research. Others will be involved in maintaining experimental equipment to ensure that it is serviceable and fit for purpose.

In some cases successful foundation apprentices may be offered progression to a Level 3 Apprenticeship specialising in education science or indeed some other area of activity such as Industrial Science or Analytical and Process Science.

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note

Either workbook will be acceptable for apprenticeship certification

Level 2, Pathway 2: Laboratory and Associated Technical Activities (Industrial Science)

Description of this pathway

Laboratory and Associated Technical Activities (Industrial Science) Total minimum credit value = 67 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician (Standards)	Maintain, calibrate and verify equipment functionality for test purposes
Laboratory (Maintenance)	Maintain instruments and medical devices
Laboratory Test Technician (Quality)	Quality testing of manufactured products
Laboratory Analysis Techncian	Analyse samples after manufacture
Laboratory Techncian (Process)	Analysis of samples during manufacture
Laboratory Technician (Metrology)	Ensure test equipment and instrumentation is appropriately calibrated to ensure accurate measurement
Laboratory Technician (Health Physics)	Monitoring of ionising radiation levels by real time measurement and by anlysing dosimeter equipment
Laboratory Technician (Process)	Control and testing of petrochemical products

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 2 NVQ Certificate in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1868/7	PAA\VQ-SET (Industrial Science Pathway)	32	245	N/A

C2 - Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1664/4	Edexcel (Industrial Science Pathway)	32	245	N/A

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 2 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6671/7	Edexcel	60	360	N/A

K2 - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/7453/2	Edexcel	30	180	N/A

Knowledge qualifications available to this pathway(cont.)

K3 - Edexcel BTEC Level 2 Extended Certificate in Engineering (Specialist: Applied Science) (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/8250/4	Edexcel	30	180	N/A

K4 - PAA\VQ-SET Level 2 Certificate in Laboratory Technical Skills (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	600/1546/9	PAA\VQ-SET	17	115	N/A

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a to K4a provides underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific principles to equip apprentices with the basic understanding required to operate effectively and efficiently in the industry.

In this pathway the units selected from the knowledge-based qualifications should be delivered in a workplace context, such as metallurgy or processing laboratory.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 1	6
Application of numbers	Level 1	6
IT	Level 1	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up laboratory technician positions in industrial, petrochemical and nuclear companies carrying out a wide variety of technician job roles

In some cases successful foundation apprentices may be offered progression to a Level 3 Apprenticeship specialising in Industrial Science or indeed some other area of activity such as Education Science or Analytical and Process Science.

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

Level 2, Pathway 3: Laboratory Science (Compound Analysis)

Description of this pathway

Laboratory Science (Compound Analysis) Total minimum credit value = 85 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician (Process Control and Testing))	Control and testing of GMP chemical compounds and products
Laboratory Analysis Technician	Analysis of samples after GMP manufacture
Laboratory Test Technician (Quality)	Quality testing of GMP manufacture
Laboratory Technician (Process Analysis)	Analysis of biotechnology / pharmaceutical samples from GMB Manufacture to ensure quality control
Laboratory Manufacturing Technician	Preparation of GMP manufacturing batch stock
Laboratory Analysis Technician (Biological / Chemical Analysis)	Biological / chemical analysis of samples to determine content

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 2 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1207/7	PAA\VQ-SET (Compound Analysis Pathway)	50	268	N/A

C2 - Edexcel Level 2 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1730/2	Edexcel (Compound Analysis Pathway)	50	268	N/A

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 2 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6671/7	Edexcel	60	360	N/A

K2 - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/7453/2	Edexcel	30	180	N/A

Knowledge qualifications available to this pathway(cont.)

K3 - PAA\VQ-SET Level 2 Certificate in Laboratory Technical Skills (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	600/1546/9	PAA\VQ-SET	17	115	N/A

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a to K3a provides underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific principles to equip apprentices with the basic understanding required to operate effectively and efficiently in the industry.

In this pathway the units selected in the knowledge-based element should be delivered in a workplace analytical or process laboratory context.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 1	6
Application of numbers	Level 1	6
IT	Level 1	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up laboratory technician positions in bio-science, pharmaceutical and bio-technology roles where GMP regulatory requirements apply.

In some cases successful foundation apprentices may be offered progression to a Level 3 Apprenticeship specialising in compound analysis or indeed some other area of activity such as Education Science or Industrial and Process Science.

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

Level 2, Pathway 4: Laboratory Science (Clinical Analysis)

Description of this pathway

Laboratory science (Clinical Analysis) Total minumum credits = 72 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician (Human and Animal)	Therapeutic and diagnostic GLP / GCP testing
Medical Laboratory Assistant	Collect, store, process and prepare patient specimens

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 2 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1207/7	PAA\VQ-SET (Clinical Analysis Pathway)	37	214	N/A

C2 - Edexcel Level 2 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1730/2	Edexcel (Clinical Analysis Pathway)	37	214	N/A

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 2 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6671/7	Edexcel	60	360	N/A

K2 - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/7453/2	Edexcel	30	180	N/A

Knowledge qualifications available to this pathway(cont.)

K3 - PAA\VQ-SET Level 2 Certificate in Laboratory Technical Skills (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	600/1546/9	PAA\VQ-SET	17	115	N/A

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a to K3a provides underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific principles to equip apprentices with the basic understanding required to operate effectively and efficiently in the industry.

In this pathway the units selected in the knowledge-based qualifications should be delivered in a workplace context such as a clinical laboratory (human or animal) pathology or histology analytical laboratory.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 1	6
Application of numbers	Level 1	6
IT	Level 1	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up laboratory technician positions in research and development, hospitals and healthcare (human and animal) carrying out a wide variety of job roles.

In some cases successful foundation apprentices may be offered progression to a level 3 Apprenticeship specialising in Clinical Analysis or indeed some other area of activity such as Education Science or Compound and Process Science.

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

Level 3

Title for this framework at level 3

Apprenticeship for Laboratory and Science Technicians

Pathways for this framework at level 3

Pathway 1:	Laboratory and Associated Technical Activities - (Education Science)
Pathway 2:	Laboratory and Associated Technical Activities (Industrial Science)
Pathway 3:	Laboratory Science - Analytical & Process Science

Level 3, Pathway 1: Laboratory and Associated Technical Activities - (Education Science)

Description of this pathway

Laboratory and Associated Technical Activities - Science and Laboratory technicians (Education Science) Total minimum credit value = 91 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician Education Science (General)	Work with teachers, lecturers and university staff to develop apparatus, equipment and resources for school / college / university research and experimentation
Laboratory Technician Education Science (Maintenance)	Developing and advising maintenance requirements for apparatus, resources and equipment to be used for experimental research and new designs with their associated maintenance

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1869/9	PAA\VQ-SET (Education Science Pathway)	48	300	

C2 - Edexcel Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1731/4	Edexcel (Education Science Pathway)	48	300	

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 3 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6673/0	Edexcel	120	720	

K2 - Edexcel BTEC Level 3 Diploma in Engineering (Specialist: Applied Science) (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8186/X	Edexcel	60	360	

Knowledge qualifications available to this pathway(cont.)

K3 - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/6720/5	Edexcel	180	1080	

K4 - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/6725/4	Edexcel	60	360	

K5 - PAA\VQ-SET Level 3 Certificate in Laboratory Technical Skills (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	600/1545/7	PAA\VQ-SET	25	180	

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a to K5a provides underpinning knowledge for C1a-C2a

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

In this pathway the units selected from the knowledge-based element should be delivered in a educational workplace context such as an educational laboratory

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 2	6
Application of numbers	Level 2	6
IT	Level 2	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship. Some may have already completed a Foundation Apprenticeship for Laboratory and Science Technicians (Education Science) or one of the three other pathways.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up laboratory technician positions in Schools, Colleges and Universities. 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. "Many universities are treating the level 3 applied science course as they would 3 science A levels". (*Source Edexcel*)

UCAS points for this pathway:

(no information)

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

Level 3, Pathway 2: Laboratory and Associated Technical Activities (Industrial Science)

Description of this pathway

Laboratory and Associated Technical Activities - Science and Laboratory Technicians (Industrial Science) Total minimum credit value = 103 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician (Health physics)	Develop appropriate procedures for radiological protection and monitoring
Laboratory Analysis Technician (Environmental Science)	Devising and carrying out appropriate sample testing of environmental contaminants
Laboratory Technician (Process)	Control and testing of petro-chemical products
Laboratory Technician (Standards)	Maintain, calibrate and verify equipment functionality for test purposes
Laboratory Technician (Maintenance)	Development of maintenance protocols for instruments and medical devices
Laboratory Researcher / Technician	Development of human and animal therapeutic and diagnostic instruments and technicial devices

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1869/9	PAA\VQ-SET (Industrial Science Pathway)	60	318	

C2 - Edexcel Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1731/4	Edexcel (Industrial Science Pathway)	60	318	

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 3 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6673/0	Edexcel	120	720	

K2 - Edexcel BTEC Level 3 Diploma in Engineering (Specialist: Applied Science) (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8186/X	Edexcel	60	360	

Knowledge qualifications available to this pathway(cont.)

K3 - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/6720/5	Edexcel	180	1080	

K4 - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/6725/4	Edexcel	60	360	

K5 - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	500/7319/9	Edexcel	120	720	

K6 - PAA\VQ-SET Level 3 Certificate in Laboratory Technical Skills (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	600/1545/7	PAA\VQ-SET	25	180	

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a- K6a provides underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific and mathematic principles to equip apprentices with the understanding required to operate effectively and efficiently within the science industry at a technician level.

In this pathway the units selected from the knowledge-based qualifications should ideally be delivered in an educational workplace context, such as an industrial laboratory.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 2	6
Application of numbers	Level 2	6
IT	Level 2	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship. Some may have already completed a Foundation Apprenticeship for Laboratory and Science Technicians (Industrial Science) or one of the three other pathways.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. 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. "Many universities are treating the level 3 applied science course as they would 3 science A levels". (*Source Edexcel*)

UCAS points for this pathway:

(no information)

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

Level 3, Pathway 3: Laboratory Science - Analytical & Process Science

Description of this pathway

Laboratory Science (Analytical & Process Science) Total minimum credits value = 114 credits

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

There are no additional requirements to that stated in the general entry requirements

Job title(s)	Job role(s)
Laboratory Technician (Process)	Development of batch product and analysis of samples during manufacture to ensure quality control and control and testing of chemical products
Laboratory Manufacturing Technician	Development of manufacturing protocols to ensure consistent manufacture quality
Fermentation Laboratory Technician	Development of biotechnology protocols to ensure consistent manufacture quality
Healthcare Laboratory Technicians (Haematology)	Examination of blood cells and blood clotting mechanisms
Clinical Laboratory Technicians (Microbiology)	Analysis and indentification of microorganisms

Qualifications

Competence qualifications available to this pathway

C1 - PAA\VQ-SET Level 3 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	501/1293/4	PAA\VQ-SET	71	316	

C2 - Edexcel Level 3 NVQ Diploma in Laboratory Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C2a	600/1732/6	Edexcel	71	316	

Knowledge qualifications available to this pathway

K1 - Edexcel BTEC Level 3 Diploma in Applied Science (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	500/6673/0	Edexcel	120	720	

K2 - Edexcel BTEC Level 3 Diploma in Engineering (Specialist: Applied Science) (QCF)

No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	500/8186/X	Edexcel	60	360	

Knowledge qualifications available to this pathway(cont.)

K3 - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	500/6720/5	Edexcel	180	1080	

K4 - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/6725/4	Edexcel	60	360	

K5 - PAA\VQ-SET Level 3 Certificate in Laboratory Technical Skills (QCF)					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	600/1545/7	PAA\VQ-SET	25	180	

Combined qualifications available to this pathway

N/A

Notes on competence and knowledge qualifications (if any)

K1a- K5a provides underpinning knowledge for C1a-C2a

The designated technical certificates underpin the knowledge elements of the competence qualification in this pathway. The knowledge qualifications deliver essential knowledge which supports the fundamental scientific and mathematic principles to equip apprentices with the understanding required to operate effectively and efficiently within the science industry at a technician level.

In this pathway the units selected in the knowledge-based should ideally be delivered in a workplace analytical and process laboratory context, such as a clinical or compound processing laboratory.

Transferable skills (Wales)

Essential skills (Wales)

	Minimum level	Credit value
Communication	Level 2	6
Application of numbers	Level 2	6
IT	Level 2	6

Progression routes into and from this pathway

Progression into the pathway has been described within the entry criteria but the majority of entrants are likely to be school leavers who have completed their GCSE/Baccalaureate studies and relevant vocational activity such as a work experience. Others may have worked in the science sector for a period before considering an apprenticeship. Some may have already completed a Foundation Apprenticeship for Laboratory and Science Technicians (Clinical Analysis) or one of the three other pathways.

Progression from the pathway is harder to predict as this is the first time that an apprenticeship programme has been considered as a mainstream means of training laboratory technicians. It is likely that successful apprentices will take up laboratory technician positions in in Bio-science, bio-technology, medical or pharmaceutical companies carrying out a wide variety of technician job roles in Analytical and Process Science. In most cases these will be of a supervisory nature carrying out rountine 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. "Many universities are treating the level 3 applied science course as they would 3 science A levels". (*Source Edexcel*)

UCAS points for this pathway:

(no information)

Delivery and assessment of employee rights and responsibilities

The nine national outcomes for Employee Rights and Responsibilities (ERR) are as follows:

1. The range of employer and employee statutory rights and responsibilities under employment law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and health and safety, together with the duties of employers.
2. Procedures and documentation which recognises and protects their relationship with their employer, including health and safety and equality and diversity training as part of the apprenticeship.
3. The range of sources and information and advice available to them on their employment rights and responsibilities, including Access to Work and Additional Learning Support.
4. The role played by their occupation in their organisation and industry.
5. Has an informed view of the types of career pathways that are open to them.
6. The types of representative bodies and understands their relevance to their industry and organisation and the main roles and responsibilities.
7. Where and how to get information and advice on their industry, occupation, training and career.
8. Can describe and work within their organisation's principles and codes of practice.
9. Can recognise and form a view on issues of public concern that affect their organisation and industry.

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

Method 1

Emta Awards Limited (EAL) have produced a stand-alone qualification that covers all 9 outcomes of ERR requirements. The qualification is detailed below:

EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science, Engineering and Manufacturing Sectors (QCF)

QCF qualification ref no: 600/0290/6

Credit value: 5 credits

Guided learning hours: 41

This qualification will enable apprentices to both know and understand the principles associated with the nine national outcomes such as the world of work and how they are constrained by

various legal and organisational procedures for their own well-being. Apprentices achieving the qualification will have demonstrated that they have the underpinning knowledge relevant for the science environment which satisfies the Specification for Apprenticeship Standards for Wales.

Method 2

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

customercare@eal.org.uk

The requirements for completing it must be explained to the apprentice right at the start of their training in order that they may take full advantage of their *company induction where significant amounts of information towards the national outcomes will be covered.

The workbook is intended to enable apprentices to know, understand and record the principles associated with the nine national outcomes such as the world of work and how they are constrained by various legal and organisational procedures for their own well-being.

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

Method 3

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

www.cogent-ssc.com/education_and_qualifications/Apprenticeships.php

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

To claim final certification of the apprenticeship, one of the following forms of evidence will be required:

A qualification certificate for EAL Level 2 Award in Employment Rights and Responsibilities for new Entrants into the Science Engineering and Manufacturing Sectors (QCF)

or

A completed and countersigned Semta ERR workbook

or

A completed and countersigned Cogent ERR workbook

Note
Either workbook will be acceptable for apprenticeship certification

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

Semta and Cogent recognises the training and business benefits of having apprentices from a wide variety of diverse backgrounds. We are committed to ensuring equality and diversity drives all aspects of apprentice selection and recruitment.

Equal opportunity and diversity refers to the active elimination of unlawful or unfair discrimination against any person or group on the grounds of gender, race, colour, nationality, ethnic origin, religion, age, sexual orientation, marriage and civil partnership, pregnanacy and maternity, political belief, disability and where appropriate, prison/offender background where this is deemed irrelevant.

Semta wishes to make a Gender Equality Commitment. Semta has signed the United Kingdom Resource Centre (UKRC) CEO's charter in a bid to step up female recruitment in its key sectors and programmes. Due to impending skills gaps it is estimated that 187,000 people will be required to be recruited and trained between 2010-2016 within Semta's sectors of aerospace, automotive, bioscience, composites, electrical, electronics, maintenance, marine, mathematics, metals and engineered metal products, renewables and science.
The UKRC is the Government's leading body for advanced gender equality in science, engineering and technology (SET) and the CEO's charter is a formal commitment to the UKRC's agenda to challenge the under-representation of women in SET.

Women make up 50% of the labour market, yet they make up less than 20% of the labour market in science, engineering and technology. The UKRC believes that only a concerted effort by the SET industry will break down the gender barriers that exist in traditionally male-dominated environments and we want to be part of a new consensus which will create an inclusive working environment for women.

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 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 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.

On and off the job training (Wales)

Summary of on- and off-the-job training

Foundation Apprenticeship and Apprenticeship

For the Foundation Apprenticeship and Apprenticeship, the hours outlined in the sections that follow may vary depending on previous experience and attainment of the apprentice. Where a learner enters an apprenticeship agreement having previously attained or acquired some or all of the appropriate competence or knowledge, this prior learning needs to be recognised and documented using the relevant QCF credit transfer, QCF exemption or Recognition of Prior Learning (RPL) procedures.

The amount of 'on-the-job' training required to complete the apprenticeship under the

apprenticeship agreement may then be reduced accordingly, provided the total numbers of 'on-the-job' hours for this framework can be verified for apprenticeship certification.

Those apprentices who commence training under a new apprenticeship agreement with a new employer may bring a range of prior experience with them. When an apprentice can claim 5% or more hours towards the 'on-the-job' framework total through prior learning acquired from previous full-time education, employment or other vocational programme, then the apprentice's learning programme should include "customisation".

Training providers are encouraged to identify additional 'on-the-job' training programmes that customise the learning to the new workplace. Customisation programmes may include selecting appropriate additional Unit(s) from QCF qualifications, or relevant units recognised as Quality Assured Lifelong Learning [QALL] through a CQFW recognised body, or follow Essential Skills at a level higher than that specified in the framework, including one or more Wider Key Skills or other competency-based qualifications/units relevant to the workplace.

For an apprentice who has already achieved the relevant qualification, they must have been certificated within 5 years from the date of application for the Foundation Apprenticeship or Apprentice Certificate or have been continuously employed in the industry for a minimum duration of 3 years.

Any off-the-job training undertaken before the apprentice started may count towards the off-the-job training required for the apprenticeship if it was undertaken in relation to an accredited qualification contained in the framework for which an apprenticeship certificate is applied for.

Both on and off-the-job training hours need to be planned, reviewed and jointly evaluated between the apprentice, training instructor, tutor or lecturer and workplace supervisor and where relevant the apprentices's mentor. The apprentice should have access to training support at all times whether on or off-the job training.

On and off-the job training hours should be delivered through a variety of learning methods, individual and group teaching; team-working; e-learning; distance learning; coaching; mentoring; feedback and assessment.

Total Training Hours for Foundation Apprenticeship Pathways:

Level 2 Pathway 1a : Laboratory and Associated Technical Activities - (Education Science)

Competence Level 2 NVQ Certificate in Laboratory and Associated Technical Activities (QCF) - 214 training hours

Knowledge - Edexcel BTEC Level 2 Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 1a = 867

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

Level 2 Pathway 1b : Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 214 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 1b = 687

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

Level 2 Pathway 1c: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 214 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Engineering (Specialist: Applied Science) (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 1c = 687

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

Level 2 Pathway 1d: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 214 training hours

Knowledge - PAA\VQSET Level 2 Certificate in Laboratory Technical Skills (QCF) - 115 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 1d = 622

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

Level 2 Pathway 2a: Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 245 training hours

Knowledge - Edexcel BTEC Level 2 Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 2a = 898

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

Level 2 Pathway 2b: Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 245 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 2b = 718

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

Level 2 Pathway 2c: Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 245 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Engineering (Specialist: Applied Science) (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 2c = 718

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

Level 2 Pathway 2d: Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) - 245 training hours

Knowledge - PAA\ VQSET Level 2 Certificate in Laboratory Technical Skills (QCF) - 115 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 2d = 653

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

Level 2 Pathway 3a: Laboratory Science (Compound Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 268 training hours

Knowledge - Edexcel BTEC Level 2 Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 3a = 921

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

Level 2 Pathway 3b: Laboratory Science (Compound Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 268 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 3b = 741

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

Level 2 Pathway 3c: Laboratory Science (Compound Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 268 training hours

Knowledge - PAA\ VQSET Level 2 Certificate in Laboratory Technical Skills (QCF) - 115 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 3c = 676

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

Level 2 Pathway 4a: Laboratory Science (Clinical Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 214 training hours

Knowledge - Edexcel BTEC Level 2 Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 4a = 867

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

Level 2 Pathway 4b: Laboratory Science (Clinical Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 214 training hours

Knowledge - Edexcel BTEC Level 2 Extended Certificate in Applied Science (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41

training hours) & Mentoring (72 hours)

Total training hours for pathway 4b = 687

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

Level 2 Pathway 4c: Laboratory Science (Clinical Analysis)

Competence - Level 2 NVQ Diploma in Laboratory Science (QCF) - 214 training hours

Knowledge - PAA\ VQSET Level 2 Certificate in Laboratory Technical Skills (QCF) - 115 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (72 hours)

Total training hours for pathway 4c = 622

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

Total Training Hours for Apprenticeship Pathways:

Level 3 Pathway 1a: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 300 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Applied Science (QCF) - 720 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 1a = 1337

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 1b: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 300 training hours

Knowledge - Edexcel BTEC 3 Diploma in Engineering (Specialist: Applied Science) (QCF) - 360

training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 1b = 977

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 1c: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 300 training hours

Knowledge - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF) - 1080 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 1c = 1697

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 1d: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 300 training hours

Knowledge - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 1d = 977

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 1e: Laboratory and Associated Technical Activities - (Education Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 300 training hours

Knowledge - PAA\VQSET Level 3 Certificate in Laboratory Technical Skills (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 1e = 797

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 2a Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Applied Science (QCF) - 720 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2a = 1355

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 2b Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Engineering (Specialist: Applied Science) (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2b = 995

Pathway duration approximately 24 months depending on the qualification and unit options

selected

Level 3 Pathway 2c Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF) - 1080 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2c = 1715

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 2d Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2d = 995

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 2e Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Manufacturing Engineering (QCF) - 720 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2e = 1355

Pathway duration approximately 24 months depending on the qualification and unit options

selected

Level 3 Pathway 2f Laboratory and Associated Technical Activities - (Industrial Science)

Competence - Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) - 318 training hours

Knowledge - PAA\VQSET Level 3 Certificate in Laboratory Skills (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 2f = 815

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 3a Laboratory Science - Analytical & Process Science

Competence - Level 3 NVQ Diploma in Laboratory Science (QCF) - 316 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Applied Science (QCF) - 720 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 3a = 1353

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 3b Laboratory Science - Analytical & Process Science

Competence - Level 3 NVQ Diploma in Laboratory Science (QCF) - 316 training hours

Knowledge - Edexcel BTEC Level 3 Diploma in Engineering (Specialist: Applied Science) (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 3b = 993

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 3c Laboratory Science - Analytical & Process Science

Competence - Level 3 NVQ Diploma in Laboratory Science (QCF) - 316 training hours

Knowledge - Edexcel BTEC Level 3 Extended Diploma in Applied Science (QCF) - 1080 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 3c = 1713

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 3d Laboratory Science - Analytical & Process Science

Competence - Level 3 NVQ Diploma in Laboratory Science (QCF) - 316 training hours

Knowledge - Edexcel BTEC Level 3 Subsidiary Diploma in Applied Science (QCF) - 360 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 3d = 993

Pathway duration approximately 24 months depending on the qualification and unit options selected

Level 3 Pathway 3e Laboratory Science - Analytical & Process Science

Competence - Level 3 NVQ Diploma in Laboratory Science (QCF) - 316 training hours

Knowledge - PAA\VQSET Level 3 Certificate in Laboratory Technical Skills (QCF) - 180 training hours

Other framework requirements covering Essential Skills Wales (180 training hours), ERR (41 training hours) & Mentoring (96 hours)

Total training hours for pathway 3e = 813

Pathway duration approximately 24 months depending on the qualification and unit options selected

Minimum Credits for each Foundation Apprenticeship Pathway:

Level 2 Pathway 1a - Laboratory and Associated Technical Activities (Education Science)

= 109 credits

Level 2 Pathway 1b - Laboratory and Associated Technical Activities (Education Science)

= 79 credits

Level 2 Pathway 1c - Laboratory and Associated Technical Activities (Education Science)

= 79 credits

Level 2 Pathway 1d - Laboratory and Associated Technical Activities (Education Science)

= 66 credits

Level 2 Pathway 2a - Laboratory and Associated Technical Activities (Industrial Science)

= 110 credits

Level 2 Pathway 2b - Laboratory and Associated Technical Activities (Industrial Science)

= 80 credits

Level 2 Pathway 2c - Laboratory and Associated Technical Activities (Industrial Science)

= 80 credits

Level 2 Pathway 2d - Laboratory and Associated Technical Activities (Industrial Science)

= 67 credits

Level 2 Pathway 3a - Laboratory Science (Compound Analysis) = 128 credits

Level 2 Pathway 3b - Laboratory Science (Compound Analysis) = 98 credits

Level 2 Pathway 3c - Laboratory Science (Compound Analysis) = 85 credits

Level 2 Pathway 4a - Laboratory Science (Clinical Analysis) = 115 credits

Level 2 Pathway 4b - Laboratory Science (Clinical Analysis) = 85 credits

Level 2 Pathway 4c - Laboratory Science (Clinical Analysis) = 72 credits

Level 3 Pathway 1a - Laboratory and Associated Technical Activities (Education Science)

= 186 credits

Level 3 Pathway 1b - Laboratory and Associated Technical Activities (Education Science)

= 126 credits

Level 3 Pathway 1c - Laboratory and Associated Technical Activities (Education Science)

= 246 credits

Level 3 Pathway 1d - Laboratory and Associated Technical Activities (Education Science)

= 126 credits

Level 3 Pathway 1e - Laboratory and Associated Technical Activities (Education Science)

= 91 credits

Level 3 Pathway 2a - Laboratory and Associated Technical Activities (Industrial Science)

= 198 credits

Level 3 Pathway 2b - Laboratory and Associated Technical Activities (Industrial Science)

= 138 credits

Level 3 Pathway 2c - Laboratory and Associated Technical Activities (Industrial Science)

= 258 credits

Level 3 Pathway 2d - Laboratory and Associated Technical Activities (Industrial Science)

= 138 credits

Level 3 Pathway 2e - Laboratory and Associated Technical Activities (Industrial Science)

= 198 credits

Level 3 Pathway 2f - Laboratory and Associated Technical Activities (Industrial Science)

= 103 credits

Level 3 Pathway 3a - Laboratory Science Analytical & Process Science = 209 credits

Level 3 Pathway 3b - Laboratory Science Analytical & Process Science = 149 credits

Level 3 Pathway 3c - Laboratory Science Analytical & Process Science = 269 credits

Level 3 Pathway 3d - Laboratory Science Analytical & Process Science = 149 credits

Level 3 Pathway 3e - Laboratory Science Analytical & Process Science = 114 credits

Off-the-job training

Off-the-job training is defined as time for learning activities away from normal work duties or away from the immediate pressures of the workplace.

The amount of off-the-job training hours required to complete the **Foundation Apprenticeship** varies according to each pathway and technical certificate selected, however all include a minimum of 293 additional training hours for Essential Skills Wales, ERR and mentoring.

Level 2 Pathway 1a - Laboratory and Associated Technical Activities (Education Science) = 653 off-the-job training hours

Level 2 Pathway 1b - Laboratory and Associated Technical Activities (Education Science) = 473 off-the-job training hours

Level 2 Pathway 1c - Laboratory and Associated Technical Activities (Education Science) = 473 off-the-job training hours

Level 2 Pathway 1d - Laboratory and Associated Technical Activities (Education Science) = 408 off-the-job training hours

Level 2 Pathway 2a - Laboratory and Associated Technical Activities (Industrial Science) = 653 off-the-job training hours

Level 2 Pathway 2b - Laboratory and Associated Technical Activities (Industrial Science) = 473 off-the-job training hours

Level 2 Pathway 2c - Laboratory and Associated Technical Activities (Industrial Science) = 473 off-the-job training hours

Level 2 Pathway 2d - Laboratory and Associated Technical Activities (Industrial Science) = 408 off-the-job training hours

Level 2 Pathway 3a - Laboratory Science (Compound Analysis) = 653 off-the-job training hours

Level 2 Pathway 3b - Laboratory Science (Compound Analysis) = 473 off-the-job training hours

Level 2 Pathway 3c - Laboratory Science (Compound Analysis) = 408 off-the-job training hours

Level 2 Pathway 4a - Laboratory Science (Clinical Analysis) = 653 off-the-job training hours

Level 2 Pathway 4b - Laboratory Science (Clinical Analysis) = 473 off-the-job training hours

Level 2 Pathway 4c - Laboratory Science (Clinical Analysis) = 408 off-the-job training hours

The amount of off-the-job training hours required to complete the **Apprenticeship** varies according to each pathway and technical certificate selected, however all include a minimum of 317 additional training hours for Essential Skills Wales, ERR and mentoring.

Level 3 Pathway 1a - Laboratory and Associated Technical Activities (Education Science)

= 1037 off-the-job training hours

Level 3 Pathway 1b - Laboratory and Associated Technical Activities (Education Science)

= 677 off-the-job training hours

Level 3 Pathway 1c - Laboratory and Associated Technical Activities (Education Science)

= 1397 off-the-job training hours

Level 3 Pathway 1d - Laboratory and Associated Technical Activities (Education Science)

= 677 off-the-job training hours

Level 3 Pathway 1e - Laboratory and Associated Technical Activities (Education Science)

= 497 off-the-job training hours

Level 3 Pathway 2a - Laboratory and Associated Technical Activities (Industrial Science)

= 1037 off-the-job training hours

Level 3 Pathway 2b - Laboratory and Associated Technical Activities (Industrial Science)

= 677 off-the-job training hours

Level 3 Pathway 2c - Laboratory and Associated Technical Activities (Industrial Science)

= 1397 off-the-job training hours

Level 3 Pathway 2d - Laboratory and Associated Technical Activities (Industrial Science)

= 677 off-the-job training hours

Level 3 Pathway 2e - Laboratory and Associated Technical Activities (Industrial Science)

= 1037 off-the-job training hours

Level 3 Pathway 2f - Laboratory and Associated Technical Activities (Industrial Science)

= 497 off-the-job training hours

Level 3 Pathway 3a - Laboratory Science Analytical & Process Science = 1037 off-the-job training hours

Level 3 Pathway 3b - Laboratory Science Analytical & Process Science = 677 off-the-job training hours

Level 3 Pathway 3c - Laboratory Science Analytical & Process Science = 1397 off-the-job training hours

Level 3 Pathway 3d - Laboratory Science Analytical & Process Science = 677 off-the-job training hours

Level 3 Pathway 3e - Laboratory Science Analytical & Process Science = 497 off-the-job training hours

How this requirement will be met

Off-the-job training needs to:

- be planned, reviewed and evaluated jointly between the apprentice and a tutor, teacher, mentor or manager
- allow the apprentice to have access to a tutor, teacher, mentor or manager as and when required
- be delivered during contracted working hours
- be delivered through one or more of the following methods: individual and group teaching, e-learning, distance learning, coaching; mentoring, feedback and assessment; collaborative/networked learning with peers, guided study and induction

The Knowledge qualification, Essential Skills Wales and Employment Responsibilities and Rights will be formally delivered by the training provider/college staff in accordance with the awarding organisation's delivery and assessment guidance.

It is recommended that a mentor is appointed for each apprentice to review their progress on a regular basis. It is estimated that a mentor will have up to one hour per week contact time with each apprentice. This activity will take place off-the-job but is inclusive within the off-the-job hours quoted in the previous section.

Evidence of Off-the-job hours

Off-the-job training must be formally recorded, either in a diary, workbook, portfolio or be verified by attendance records. This evidence needs to be checked and signed by the assessor. The range of evidence requirements are as follows:

- Copy of the Awarding Organisation certificates for Communication & Application of number & IT (Essential Skills Wales)
- Copy of the Awarding Organisation certificate for the ERR qualification or completed countersigned ERR workbook
- Copy of the Awarding Organisation certificate for the knowledge qualification

Previous experience

Where an applicant enters an apprenticeship agreement with previous work-related experience, this prior learning needs to be recognised (see QCF Guidance on Claiming Credit for further details). To count towards apprenticeship certification, previous experience must be recorded using the appropriate awarding organisation's CQFW 'Recognition of Prior Learning' (RPL) procedures and the hours recorded may then count towards the off-the-job hours required to complete the apprenticeship.

For apprentices with prior uncertificated learning experience, the off-the-job learning must have been acquired within 5 years of application for the Apprenticeship Certificate or have been continuously employed in the relevant job role in the industry for 5 years duration.

On-the-job training

On-the-job training training is defined as skills, knowledge and competence gained within normal working duties. For this framework the training hours f or 'on-the-job' training is as follows:

Foundation Apprenticeship

Level 2 Pathways 1a-1d Minimum on-the-job training hours is 214 and is evidenced by completion of the Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) (Education Science)

Level 2 Pathways 2a-2d Minimum on-the-job training hours is 245 and is evidenced by completion of the Level 2 NVQ Certificate in Laboratory and Associated Technical activities (QCF) (Industrial Science)

Level 2 Pathways 3a-3c Minimum on-the-job training hours is 268 and is evidenced by completion of the Level 2 NVQ Diploma in Laboratory Science (QCF) (Compound Analysis)

Level 2 Pathways 4a-4c Minimum on-the-job training hours is 214 and is evidenced by completion of the Level 2 NVQ Diploma in Laboratory Science (QCF) (Clinical Analysis)

Apprenticeship

Level 3 Pathways 1a-1e Minimum on-the-job training hours is 300 and is evidenced by completion of the Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) (Education Science)

Level 3 Pathways 2a-2f Minimum on-the-job training hours is 318 and is evidenced by completion of the Level 3 NVQ Diploma in Laboratory and Associated Technical Activities (QCF) (Industrial Science)

Level 3 Pathways 3a-3e Minimum on-the-job training hours is 316 and is evidenced by completion of the Level 3 NVQ Diploma in Laboratory Science (QCF)

How this requirement will be met

In all competence qualification pathways detailed above the apprentice will receive on-the-job training via delivery of the competence based element (NVQ Certificate or Diploma). Apprentices will generate a work-based portfolio to record the evidence that they have undertaken the appropriate competences. This will be overseen by a personal mentor who will monitor progress and offer guidance. The apprentices will then be formally assessed regularly by a qualified Awarding Organisation assessor who will record the apprentice's progress towards completion of the competence qualification .

The NVQ Certificate or Diploma should be delivered in accordance with the Awarding Organisations delivery and assessment guidance, which includes the additional requirements as set down in Semta's unit assessment strategy. This can be downloaded from Semta's website using the Url address below. This process is regulated and quality assured by DfES and Ofqual.

www.semta.org.uk/training_providers__awarding/ national_occupational_standard/qca_assessment_requirements.aspx

Evidence Requirements:

A copy of the certificate for the NVQ competence qualification as detailed above within the pathways will be required for final Appprenticeship certification

Wider key skills assessment and recognition (Wales)

Improving own learning and performance

At a recent meeting with key employers and training providers in Wales the subject of the applicability of the Wider key skill - Improving Own Learning Performance within this framework was discussed fully. The overwhelming view was that it should not form part of an assessed component of the framework but was embedded within the learning undertaken in the mandatory units of the competence qualification and through the feedback of the appointed mentor.

Working with others

At a recent meeting with key employers and training providers in Wales the subject of the applicability of the Wider key skill - Working with Others within this framework was discussed fully. The overwhelming view was that it should not form part of an assessed component of the framework but was embedded within the learning undertaken in the mandatory units of the competence qualification.

Problem solving

At a recent meeting with key employers and training providers in Wales the subject of the applicability of the Wider key skill - Problem Solving within this framework was discussed fully. The overwhelming view was that it should not form part of an assessed component of the framework but was embedded within the learning undertaken in the mandatory units of the competence qualification.

Additional employer requirements

There are no additional employer requirements.

apprenticeship
FRAMEWORKS ONLINE

For more information visit
www.apprenticeshipframeworksonline.semta.org.uk