



The Sector Skills Council
for Science, Engineering and
Manufacturing Technologies



The Sector Skills Council for the
Chemicals, Nuclear, Oil & Gas,
Petroleum and Polymer Industries

Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians	Framework Issue Number 1
Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians	Framework Issue Number 1

Framework Code

3	7	8
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**Date submitted to the
QMG:**

19 August 2009

**Would you like to present the
framework to the QMG at its
next meeting?**

N/A

**Date approved by the
QMG:**

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Date funding agreed

(to be inserted by the SSC/SSB once agreed)
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**Implementation date:
England**

16 October 2009

Wales

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Llywodraeth Cynulliad Cymru
Welsh Assembly Government



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Summary of Changes to this Framework

This is essentially a new framework derived from two currently compliant Laboratory Technician Apprenticeship frameworks, 288 (Semta) and 103 (Cogent).

Many of the qualifications remain consistent with the framework versions above. However, in creating this framework we have taken the opportunity to include up to date QCF technical certificates and functional skills.

1. Contact Details of the Industry or Sector

1.1 Contact details of Semta and Cogent

Title, level and coverage of apprenticeship	Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians at level 2 for England and Wales Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians at level 3 for England and Wales
Name of Sector Skills Council/Standard Setting Body	Semta and Cogent
Contact name	Semta – Ian Carnell, Head of Learning Strategies Cogent - Ian Lockhart, Apprenticeship Manager
Address	Semta Semta House 14 Upton Road Watford Herts WD18 0JT Cogent SSC Limited Unit 5, Mandarin Court Centre Park Warrington WA1 1GG
Telephone number	Semta: 01923 238441 Cogent: 01925 515223
Fax number	Semta: 01923 652350 Cogent: 01925 515240
Email address	Semta: icarnell@semta.org.uk Cogent: ian.lockhart@cogent-ssc.com
Date sent to QMG	19 August 2009
Date of Implementation	16 October 2009

1.2 Responsibility for the Framework

Responsibility for the Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians and the Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians rests jointly with Semta the Sector Skills Council for Science, Engineering and Manufacturing Technologies and Cogent the Sector Skills Council for Chemicals, Pharmaceuticals, Nuclear, Oil & Gas, Petroleum & Polymers.

Summary of the Mandatory Outcomes

2.1 Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians

Framework Code

Framework Issue Number

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Apprenticeship/Foundation Modern Apprenticeship	Level
Competence Based Element	
NVQ: Laboratory and Associated Technical Activities	2
Knowledge Based Element	
Technical Certificate(s): Certificate in Laboratory Technical Skills BTEC First Diploma in Applied Science	2 2
Key Skills	
Application of Number Communications Information Technology	1 1 1
Or	
Functional Skills: Mathematics Functional Skills: English Functional Skills: Information Technology	1 1 1
Additional Employer Requirements	
There are no additional employer requirements	
Employment Rights and Responsibilities	
Semta and Cogent recommend that ERR is included in the induction and subsequent phases of the industrial period. On completion, the trainer or training provider should fill in the 'Confirmation of Completion' form contained within the ERR workbook. This form must be included with the request for the Apprenticeship/Foundation Modern Apprenticeship certificate. ERR workbooks are available via: www.semta.org.uk www.cogent-ssc.com	

2.2 Summary of the Mandatory Outcomes for the Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians

Framework Code Framework Issue Number

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Advanced Apprenticeship/Modern Apprenticeship	Level
Competence Based Element	
NVQ: Laboratory and Associated Technical Activities	3
Knowledge Based Element	
Technical Certificate(s): Certificate in Laboratory Technical Skills BTEC National Certificate in Applied Science BTEC National Diploma in Applied Science BTEC National Diploma in Applied Science (QCF) BTEC Subsidiary Diploma in Applied Science (QCF)	3 3 3 3 3
Key Skills	
Application of Number Communications Information Technology	2 2 2
Or	
Functional Skills: Mathematics Functional Skills: English Functional Skills: Information Technology	2 2 2
Additional Employer Requirements	
There are no additional employer requirements	
Employment Rights and Responsibilities	
Semta and Cogent recommend that ERR is included in the induction and subsequent phases of the industrial period. On completion, the trainer or training provider should fill in the 'Confirmation of Completion' form contained within the ERR workbook. This form must be included with the request for the Advanced Apprenticeship/Modern Apprenticeship certificate. ERR workbooks are available via: www.semta.org.uk www.cogent-ssc.com	

3 Overview of the Framework

3.1 Description of the Sector and why the sector needs Apprenticeships

3.1.1 The complete sector overview:

The overall group of sectors serviced by the laboratory technicians role amounts to 95,000 employers, 2.8 million employees and contributes £119 billion to the UK economy (GVA).

Responsibility for laboratory technicians is shared by two Sector Skills Councils (SSCs), Semta and Cogent. Each SSC has their own occupational footprint identified by appropriate Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC) codes, but at the same time they share boundaries which are often unclear, one such grey area is laboratory technician activity.

Semta's laboratory science remit is confined to three specific areas, Engineering Science, Bioscience and Education. Engineering Science includes research, development and testing of new innovations in mechanical, electronic and electrical products and services. Our priority is the skills needs of the aerospace, electronics, automotive, metals and marine sectors.

Bioscience (sometimes referred to as life sciences) includes the research and development of human and animal therapeutic diagnostic sciences and medical devices. Our priority is the skills needs of bio-manufacturing, contract research, and pharmaceutical companies.

There is also a growing need for laboratory technicians in Education, covering schools, colleges and universities and this is also addressed.

Currently, Semta is focusing on the skills needs of the bioscience sector. Here we are working to close the current skills gap by increasing the supply of quality people to the sector.

Basic laboratory science is currently being carried out by post-graduates across the sector, it is generally agreed that they are unsuited to this basic role, often lacking sound laboratory science techniques, and the relevant motivation. Paying post-graduates to carry out this work drives up both research and manufacturing costs. It is recognised that a more effective solution would be to train laboratory technicians at levels 2 and 3 to fulfil this task.

Having both an Apprenticeship/Foundation Modern Apprenticeship and an Advanced/Modern Apprenticeship framework for laboratory technicians available will ensure that young people and adults can be given the skills in basic laboratory science that are required by the sector.

Key facts

- 27% of companies cannot expand because they lack the skilled people they need
- 26% of companies now go abroad for the skilled people they need
- 29% of companies report skills gaps in the current workforce
- 82% of companies support continuous professional development (CPD) and training activity

Future outlook

The bioscience sector is continuing to grow in importance and consequently needs to attract good quality personnel. The UK has a strong heritage and global presence in bioscience research and development. This makes it well placed to attract further products, franchises and investment, allowing UK companies to compete with sites across the world. However, the UK's world-leader status is under threat from a widening skills gap which could see work going overseas if urgent action is not taken to improve the skills base.

A solid science base is essential if employers in the sector are to recruit the highly-skilled people they need. It also enables employers to collaborate with centres of excellence in research, and develop their scientific thinking along with academics. Effective clusters of bioscience employers and providers of education and training currently exist – notably in the North West. Expanding and developing these networks will be key to the future success of the sector.

People and skills

The bioscience sector has a large demand for highly-skilled technicians, graduates and those with postgraduate degrees.

Recruitment priorities include:

- in vivo sciences – physiology, pharmacology, toxicology, pathology
- clinical research
- chemistry (medicinal and analytical)
- engineering
- mathematics and statistics – including advanced mathematics and mathematical modelling

Employers are suffering from a lack of people with the practical skills needed at all levels.

Cogent Sector Overview

Cogent is the SSC for the chemical, pharmaceuticals, nuclear, oil, gas, petroleum, and polymer industries. It is employer driven, working to identify and quantify employers' skills needs with its key partners. Its remit is to design effective training and skills interventions to support business innovation and success.

Key Facts

Cogent's industries form a strategically and critically important sector. Their footprint covers 19,000 employers, who together employ 850,000 people. Collectively, these employers generate a total GVA of £46bn. Cogent's employers produce the energy to power industry, transport and our homes. They produce hundreds of essentials for our daily lives from petroleum, plastics, paints and inks through to rubber, synthetic fibres for clothing and crucial chemical additives and pharmaceuticals.

Cogent's employers face many challenges: they must be able to compete with companies on a global basis, the requirement to be safe, clean and sustainable is paramount. Technology, science and engineering skills underpin these activities. Cogent employers have a sustained ongoing demand for thousands of highly skilled and flexible scientists, engineers, managers, and production operatives. With an ageing workforce and a decline in the number of technically qualified people, meeting this demand has become an ever increasing challenge.

People and Skills

Cogent is planning and implementing its Sector Qualification Strategy (SQS) which aims to ensure that employers of all sizes within its footprint have the skilled and qualified people they need to survive and prosper – now and in the future. It is therefore critical to the continued success of the industry that the proposed apprenticeship framework encompasses the many different skill areas required to meet today's laboratory technician demands.

3.1.2 The relationship between Semta and Cogent frameworks and other SSC frameworks

Semta and Cogent collectively own the National Occupational Standards underpinning the NVQs and technical certificates within this framework. Both SSCs have agreed that they will share the framework to service the sectors they cover. Both SSCs have other occupational areas within their footprints and have developed a number of other approved apprenticeship frameworks to service these, however these do not impinge on the shared laboratory technician framework.

3.1.3 Sector coverage of the Framework

The overall rationale for both the Apprenticeship/Foundation Modern Apprenticeship and the Advanced Apprenticeship/Modern Apprenticeship has been the development of a framework that provides learning, development and progression opportunities for all laboratory technicians in England and Wales.

Both SSCs have now taken the opportunity to pull together all the sectors' interested parties and move forward to create a single cohesive apprenticeship structure.

The combined sectors covered include

- Science - within the main engineering manufacturing groups of basic metal manufacture, metal products, mechanical equipment, electronics, electrical equipment, and motor vehicles, aerospace.
- Education (Schools, FE and HE)
- Biotechnology
- Applied sciences i.e. materials analysis and quality/condition testing.
- Scientific processes within the chemical and pharmaceuticals, nuclear, oil and gas, petroleum and polymer industries.

3.1.4 How the framework sits in relation to other SSC/SSBs

Semta and Cogent have been asked to amalgamate their laboratory technician frameworks into one cohesive framework, as it was pointed out by LSC/NAS that they share the same primary NVQs in Laboratory and Associated Technical Activities. Semta have taken the lead in preparing the new framework as they are also responsible for leading on the National Occupational Standards and working with Cogent, Lantra and Skills for Health, as all share a common interest in laboratory activity.

3.1.5 How was the framework consulted?

Both Semta and Cogent have consulted with employers and other interested parties in the sub-sectors identified above. The tables below summarise those organisations and groups.

Science: within the main Engineering Manufacturing groups of basic metal manufacture, metal products, mechanical equipment, electronics, electrical equipment, and motor vehicles, aerospace.

Employer/Employer Reps	Name of Representative
BAE Systems	Don Logan
Rolls Royce	Graham Schuhmacher
Ford Technical Training	Mark Ferries
METCOM	Gregor Macdonald
Metskill	Peter Hill
Corus (Wales)	Mike Rose
Ministry of Defence	Dave Pell
Aerospace Sector Strategy Group	Full employer membership
Electronics Sector Strategy Group	Full employer membership
Automotive Sector Strategy Group	Full employer membership
Metals Sector Strategy Group	Full employer membership
Marine Sector Strategy Group	Full employer membership

- Education (Schools, FE and HE)

Employer/Employer Reps	Name of Representative
Manchester University	John Robinson
Liverpool University	Holly Wilson
National Forum of Engineering Centres	William Devine
Stoke on Trent College	Sheila Chapman
CLEAPSS	Peter Burrows
Association for Science Education	John Lawrence
Newlands Girls School	Pauline Maynell

- Biotechnology

Employer/Employer Reps	Name of Representative
GlaxoSmithKline	Andrew Cunningham
Pfizer	Carol Fox
Schering Plough Corporation	Douglas Allison
Huntingdon Life Sciences	Lesley Earl
Astra Zeneca	Louise Cornes

- Applied sciences i.e. materials analysis and quality/condition testing.
- Scientific processes within the chemical and pharmaceuticals, nuclear, oil and gas, petroleum and polymer industries.

Employer/Employer Reps	Name of Representative
Polymer Leadership Council	Full membership
Metskill	Peter Hill
Chemical and Process Cluster Groups	Full employer membership
NEPIC	Full employer membership
Nuclear Advisory Council	Full employer membership

3.1.6 Occupations/most common job roles for apprentices undertaking the Apprenticeship/Foundation Modern Apprenticeship and the Advanced/Modern Apprenticeship for Laboratory Technicians

The Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians covers laboratory staff involved in supervised “routine procedures”, such as manufacturing analysis, biochemical analysis, process analysis, and educational equipment set-up in chemistry, biology or physics’ for instance. It involves carrying out basic laboratory procedures of a generally repetitive nature.

The Advanced/Modern Apprenticeship for Laboratory Technicians is appropriate for technicians carrying out more complex often non-routine unsupervised procedures in the same areas of activity.

Each of the frameworks covers a vast range of job roles/functions within the sub-sectors. Below are example lists of both (Apprenticeship/Foundation Modern Apprenticeship) and (Advanced Apprenticeship/Modern Apprenticeship).

Engineering Science: A&FMA	Bioscience: A&FMA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products • Laboratory Analysis Technician Analysis of samples after manufacture • Laboratory Technician (Process) Analysis of samples during manufacture • Laboratory Technician (metrology) Ensuring test equipment is maintained within measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Setting up of apparatus for school/ College/University experimentation • Laboratory Technician Maintenance Maintaining apparatus used for experiments <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Monitoring ionising radiation levels by direct measurement and analysing dosimeter equipment <p>Petroleum:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of petrochemical products 	<ul style="list-style-type: none"> • Laboratory Technician (Human and Animal) Therapeutic and diagnostic testing • Laboratory Technician (Process) Analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Maintenance of instruments and medical devices) • Laboratory Manufacturing Technician Preparation of Biochemical batch stock <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests. <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

Engineering Science: AA&MA	Bioscience: AA&MA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products – setting up test procedures to meet quality specifications • Laboratory Technician (Process) Devising analysis techniques and carrying out analysis of samples during manufacture • Laboratory Technician (metrology) Supervising the maintenance of test equipment to ensure it stays within metrology measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Working with teachers, lecturers and university staff to develop apparatus for school/College/University research and experimentation. • Laboratory Technician Maintenance Developing maintenance protocols for apparatus and equipment used for experimental research. <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Developing appropriate procedures for radiological protection and monitoring • Laboratory Analysis Technician (environmental science) Devising and carrying out appropriate sample testing of environmental contaminants <p>Petroleum:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of petro-chemical products 	<ul style="list-style-type: none"> • Laboratory Researcher/Technician development of human and animal therapeutic and diagnostic instruments and technical devices • Laboratory Technician (Process) Development of batch product and analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Development of Maintenance protocols for instruments and medical devices • Laboratory Manufacturing Technician Development of manufacturing protocols to ensure consistent manufacture quality <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests. <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Development of large batch production manufacturing processes • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

3.1.7 Career Pathways

There are established career progression routes for laboratory technicians in engineering manufacture, chemical, polymer, nuclear and petroleum sub-sectors and these are illustrated in annex B attached.

Laboratory technicians in the remaining sub-sectors of biotechnology and education have traditionally been recruited from post graduate stock. This is counter productive as this group generally lack the practical skills required to be effective and feel that the laboratory technician's role is not sufficiently challenging. Consequently there is a high turnover rate of graduates associated with these two sub-sectors. We hope that by training apprentices at levels 2 and 3 in the bioscience and education sub-sectors laboratory technicians roles, we will encourage employers to avoid the use of graduates.

In due time career pathways at levels 2 and 3 will be established in these sub-sectors.

On completion of an apprenticeship programme apprentices would normally be offered the opportunity to undertake higher level NVQs, key skills, and technical certificates separately or combined as an advanced apprenticeship programme. To some extent this is dependent on job opportunities being available at the higher level.

For advanced apprentices, opportunities exist to tackle a higher technical certificate such as BTEC HNC/D as a natural progression from BTEC National, or a Foundation degree where deemed appropriate.

The apprentice's knowledge about company career pathways, information resources, training department facilities and contact details of relevant professional bodies are covered as part of their Employment Responsibilities and Rights training.

Managers have responsibility for ongoing career development of their staff, including ex-apprentices. This would normally be conducted through the appraisal and training system, and would be linked to the companies overall rolling manpower plan.

3.1.8 Anticipated take-up

In 2007-2008 the combined Semta/Cogent take-up for Advanced Apprenticeship / Modern Apprenticeship in laboratory technicians was 171 and there were 24 Apprenticeships/Foundation Modern Apprenticeships. We would expect that the expansion of the use of the framework in Bioscience and Education sub-sectors will be quite significant so we would expect starts to remain approximately the same level or increase in 2009/10 despite the impact of the recession.

4 Content of Framework

4.1 Competence Based Element

The competence based element (NVQ at level 2) for the **Apprenticeship/Foundation Modern Apprenticeship** is listed within section 2.1 of this submission (please note that equivalent SVQ would also be acceptable). However, if SVQ are used within the framework then they would not be funded by the LSC.

Likewise, the NVQ at level 3 for the **Advanced Apprenticeship/Modern Apprenticeship** is listed within section 2.2 of this submission (please note that equivalent SVQ would also be acceptable). Again, it must be noted that if SVQs are used within the framework then they would not be funded by the LSC.

Semta and Cogent work closely with industry to identify and define the skills and knowledge requirements for the various occupations within each sub-sector. These competences are mapped to the overarching set of Competence Standards which are used as a platform to develop specific National Occupational Standards (NOS). The main utility of the National Occupational Standards is for the development of nationally recognised qualifications such as N/SVQs. For this purpose, further work is undertaken with industry representatives to group the appropriate units into qualification structures that are appropriate for use.

These qualification structures are made up of a number of mandatory units that all taking the qualification must complete, together with a range of optional units to give the qualification sufficient breadth to cover the variations across the sub-sectors for a given occupation or range of related occupations.

4.2 Knowledge Based Element – Technical Certificates at Levels 2 & 3

The knowledge based element, technical certificates, for the **Apprenticeship/Foundation Modern Apprenticeship at level 2** are detailed in section 2.1 of this framework. A full list of suitable Technical Certificates for the **Advanced Apprenticeship/Modern Apprenticeship at level 3** can be found in section 2.2 of this framework.

Technical certificates focus on the knowledge and understanding which underpins the NVQ competencies and additional knowledge to facilitate progression to Higher Education or higher levels of working. Technical certificates may also cover wider aspects of the occupation/sector as determined by Semta and Cogent and agreed with the Awarding Bodies. They are a structured approach to teaching and assessment, including external assessment, and are usually delivered through a taught programme of 'off-the-job' learning. There may be instances where a candidate will be exempt from achievement of a technical certificate as part of their Apprenticeship programme, for example, if they have already achieved a vocational education award that is of a higher level higher than the technical certificate required by the framework. To avoid any difficulties at the point of claiming the certificate, providers must gain written agreement to any exemptions during the initial development phase of the apprentice's programme.

4.3 Key Skills/Functional Skills

The key skills levels identified below state the minimum levels required within each apprenticeship. Candidates should be encouraged and given the opportunity to achieve higher level key skills if appropriate to their needs and abilities.

For the **Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians** the following key skills at the appropriate levels must be achieved:

- Application of Number level 1
- Communication level 1
- Information Technology level 1

For the **Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians** the following key skills at the appropriate levels must be achieved:

- Application of Number level 2
- Communication level 2
- Information Technology level 2

Key skills are essential skills that candidates need in order to function effectively as members of a flexible, adaptable and competitive workforce. However, those candidates who have previously achieved good grade qualifications in literacy, numeracy and/or computer skills need not be asked to attempt key skills in accordance with the regulatory bodies' guidelines. Please see the following statements below.

In England Key Skills requirements can be attained in three ways:

1. Through the key skills qualification, which is strongly recommended
2. Through a proxy qualification
3. Through a relaxation

Proxies

Proxy qualifications are those qualifications that have been agreed to assess the same knowledge and skills aspects as the key skills. Because of this overlap, candidates can claim exemption from all or part of particular key skills qualifications for up to three years from the date of the award of the specific accredited proxy qualifications. For full details of accredited proxy qualifications, please visit the QCA website: www.qca.org.uk

Relaxations

The relaxation ruling was introduced in September 2001 and allows candidates who started on an apprenticeship programme on or after 1 September 2001, and who have achieved a good grade A*-C GCSE in English, Mathematics and/or ICT, to complete their frameworks without being required to take the level 2 (level 1 by default) Communication, Application of Number and /or IT Key Skills qualifications.

This also applies to those candidates who have achieved a GCE A/AS level at grade A-E in English Language, English Literature, English Language and

Literature, Mathematics, Pure, Mathematics, Further Mathematics, ICT and/or Applied ICT.

For further details on queries relating to both the proxy qualifications and the relaxation rule, please refer to the *Key Skills Policy and Practice: Your Questions Answered* document available from QCA, DCSF and the LSC National Office.

Please note that the key skills external test is no longer compulsory in Wales.

Functional Skills (England Only)

Functional Skills in English and mathematics help people to gain the most out of life, learning and work.

The skills are learning tools that enable people:

- to apply their knowledge and understanding to everyday life
- to engage competently and confidently with others
- to solve problems in both familiar and unfamiliar situations
- to develop personally and professionally as positive citizens who can actively contribute to society.

Full information on the Functional Skills Standards can be downloaded from the Qualifications and Curriculum Authorities website.

The Functional Skills levels identified below state the minimum levels required within this apprenticeship. Candidates should be encouraged and given the opportunity to achieve higher level Functional Skills if appropriate to their needs and abilities. This Framework currently only requires two Functional Skills, these being mathematics and English.

For the **Apprenticeship/Foundation Modern Apprenticeship in Engineering** the following Functional Skills at the appropriate levels must be achieved:

- Functional Skill: Mathematics Level 1
- Functional Skill: English Level 1

For the **Advanced Apprenticeship/Modern Apprenticeship in Engineering** the following Functional Skills at the appropriate levels must be achieved:

- Functional Skill: Mathematics Level 2
- Functional Skill: English Level 2
- Functional Skill: Information Technology Level 2

Proxies and Relaxations

Please note: there are **no** proxies or relaxations for the Functional Skills

Functional Skills are only for use in England.

4.4 Additional Employer Requirements

There are no additional employer requirements for apprentices.

4.5 Employment Rights and Responsibilities

Employment responsibilities and rights (ERR) include material covering:

- The responsibilities and rights of workers (including Equal Opportunities and in Wales, Welsh Language legislation)
- The organisation, disciplines and representative structures of the industries concerned
- The impact on the sector of public law and policies.

Semta and Cogent recommend that ERR is included in the induction and subsequent phases of the industrial period.

ERR must be completed by the end of the Apprenticeship programme. On completion, the trainer or training provider must fill in the 'Confirmation of Completion' form contained within the ERR workbook. This has to be signed by the trainer and by a Director or senior manager of the employing organisation.

In order to obtain the final framework completion certificate, the ERR confirmation of completion form must be submitted with the Certificate Request Form, alongside all other corresponding evidence required.

It is possible to order Semta ERR workbooks by contacting the following number. (0)870 240 6889. In order to obtain the Cogent ERR workbook follow the attached link. http://www.cogent-ssc.com/education_and_qualifications/Apprenticeships/Chemicals/employers_rights.php

5 Implementation of Framework

5.1 Employed Status: Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians

Apprentices on the programme should be either:

- Directly employed by an employer and on their payroll
- Based with an employer but not directly employed, and paid an allowance by the employer
- Based with a provider and placed with an employer who will provide work-based learning opportunities

It is recommended that the apprentice has employed status, but it is recognised that there will be situations where this is not possible.

Irrespective of the status of the apprentice, when embarking on an apprenticeship programme there has to be a designated employer who agrees to provide the high quality work-based training element. Therefore, it is essential that both the apprentice and employer be briefed on their respective responsibilities.

Employed Status: Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians

Apprentices in the 16-24 year old age bracket, on the programme, should be directly employed by an employer and on their payroll

Advanced Apprentices aged 25+ only

Apprentices in the 25+ year old age bracket should be directly employed and on the payroll, and have acquired a number of years experience within the science sector at level 2 before entry.

5.2 Entry Requirements

This framework does not impose any restrictions on entry such as minimum levels of qualification. However for entry onto the programme, candidates (16-24 and 25+) must be able to demonstrate the potential to achieve either NVQ level 2 in the case of the Apprenticeship/Foundation Modern Apprenticeship or NVQ level 3, for the Advanced Apprenticeship/Modern Apprenticeship and have sufficient knowledge and ability to undertake training to achieve key skills/functional skills at level 2 and a suitable technical certificate at either level 2 or 3 depending on the programme. As a guide, candidates who have 5 GCSEs at grades D or E would find the apprenticeship programme academically suitable while those at 'C' grade or above including maths and a science would be more suited for the Advanced Apprenticeship.

The prime responsibility for selection and recruitment of the apprentice lies with individual employers who will have a clear idea of their own requirements; however the training provider should provide professional advice and guidance to assist this process. The frameworks embrace a wide range of levels and types of job and different career paths and therefore the broad principles of selection must be sufficiently flexible to allow employers to tailor them to meet their particular requirements.

As a general guide candidates should have the following skills and attributes:

- self motivation to succeed within the science industry
- a reasonable level of numeracy and literacy
- self discipline and enthusiasm
- willingness to learn and apply that learning in the workplace
- willingness to work with due regard to Health and Safety of self and others
- willingness to communicate effectively with a range of people
- willingness to work flexibly, encompassing both on and off-the-job environments

For existing employees in the 25+ age bracket, the employer would already have sufficient track record information on the individual including reports from their immediate supervisor/manager to make an objective judgement as to the candidate's suitability for either of the programmes.

5.3 Minimum Duration of Training

The minimum length of stay for 16-24 year old apprentices on the Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians is 12 months.

In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences.

The minimum length of stay for Advanced Apprentices/Modern Apprentices in the same age bracket is typically 36 months. In practice, this is also considered indicative as again the apprentices' progress will depend on the achievement of the required competence.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

5.4 Health and Safety

Health and Safety is a formal part of the induction training process and every apprentice should understand their responsibilities to protect themselves and other people. All partners involved in the implementation of apprenticeship programmes must adhere to their statutory responsibilities for Health and Safety as follows:

- A safe working environment for apprentices must be provided whilst they are at work or in training

- Appropriate training on Health and Safety in the workplace must be given to each apprentice
- Awareness of, and compliance with, legislation relating to the Health and Safety at Work Act 1974, the Working Time Regulations 1998 and any other relevant legislation must be demonstrated

The apprentice must be aware of and comply with their statutory responsibility for Health and Safety at work. This relates to their own safety and to the safety of others in the work place. They must also be aware of, and comply with, any additional Health and Safety procedures laid down by their employer/provider

Local LSCs/DCELLS are responsible for monitoring the compliance of providers to their statutory Health and Safety obligations and will carry this out through their quality assurance procedures Providers will monitor the compliance of employers with Health and Safety statutory Requirements

Risk assessment

Employers, as part of their statutory responsibilities under the Management of the Health and Safety at Work Regulations 1999, are required to:

- Assess the risk to the individual before they start work
- Take account of their inexperience and lack of awareness of existing or potential risks
- Address specific factors in the risk assessment
- Take account of the risk assessment in determining whether the individual should be prohibited from certain work activities, except where it is necessary for their training
- Ensure risks are reduced as far as reasonably practicable
- Ensure proper supervision is provided by a competent person
- Check their employer's liability insurance to ensure that no exclusions apply

5.5 Equality and Inclusion

The LSCs/DCELLS has a statutory duty (Learning and Skills Act 2000, section 14) to have due regard to the need to promote equality of opportunity between people from different racial groups, men and woman, people with a disability and people without.

Whilst Equal Opportunities has been identified here under a separate heading, the principles relate to all those systems and procedures which have the potential to discriminate against apprentices at any point during the programme - from recruitment and selection and induction, through to successful completion.

There should be "open recruitment" of apprentices to the programme, which is available to anyone over the age of 16, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability who meet the stated selection criteria.

All partners involved in the delivery of the Apprenticeship/Foundation Modern Apprenticeship and Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians in Manufacturing Processes and Education - local

LSCs/DCELLS, providers, assessment centres and employers - must be committed to a policy of Equal Opportunities and must have a stated Equal Opportunities policy and procedures. Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation, such as:

- The Sex Discrimination Act, 1975 (and 1986) and Code of Practice
- The Race Relations Act, 1976 and Code of Practice
- The Disability Discrimination Act, 1995 and Code of Practice
- EU Equal Treatment Framework Directive (2000/78)
- Race Relations (Amendment) Act 2000
- Special Educational Needs & Disability Act 2001 and Code of Practice
- Equal Pay Act 1970 and Code of Practice

The apprentices' knowledge about Equal Opportunities policies and procedures can be used as evidence for the Employment Responsibilities and Rights component of this framework.

5.6 Equal Opportunities monitoring procedures

Providers and employers will monitor Equal Opportunities policies and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.

Local LSCs/DCELLS have responsibility to monitor Equal Opportunities practices to ensure that providers meet the criteria specified in their quality management systems. This includes monitoring the representation of apprentices in terms of gender, ethnicity and disability to ensure that it reflects, as far as possible, the levels of representation within the local community.

Semta and Cogent monitor Equal Opportunities, primarily by the analysis of the LSC/DCELLS statistical returns. Where questions arise concerning policy and practice, Semta and Cogent will work closely with the local LSCs/DCELLS concerned to identify causes and to implement positive action where appropriate.

5.7 Transfer Arrangements from Previous Framework

Where the mandatory outcomes of a framework are changed as a result of a review, Semta and Cogent will specify the dates the new framework will start and the cut off date for registration under the old frameworks. The decision to retain existing apprentices under the old framework, or transfer them onto the revised framework will be made in the best interests of the apprentice who, along with the other partners, will sign a new/revised Individual Apprenticeship Plan.

This framework will take effect from the 16 October 2009 and therefore all apprentices registered after this date must adhere to the specifications of this framework. Those apprentices whom have recently been register to the previous

frameworks must make a joint decision with the training provider and employer as to whether moving across to the new framework will be of benefit.

5.8 Monitoring Arrangements for the Framework

Semta and Cogent will monitor the framework as follows:

- Regular analysis of the statistical data provided by the LSC and DCELLS
- Feedback from the membership on the National Training Framework Committee
- Feedback collected via regular dialogue with employers attending the Science Sector Strategy Groups (SSGs) advising Semta on its Sector Skills Agreement
- Feedback from training providers (Group Training Associations, employer providers, and colleges)
- Data gained from framework evaluation exercises
- Data gained from National Trainee Feedback System

Semta also has an annual plan for the review of National Occupation Standards which will inform both the competence and knowledge based components of the framework. This work is ongoing, and provides the driving force to regularly review our frameworks to ensure they contain the latest developments on NOS.

6 Achievement and Progression

6.1 Certification

The framework should be certificated by the relevant SSC which can be identified by the relevant SOC codes below.

Cogent SOC codes

2125 – Chemical Engineers

8114 – Chemical and Related Process Operations

8115 – Rubber Process Operations

8116 – Plastic Process Operations

Semta SOC codes

3111 – Laboratory Technicians

3112 – Electrical/Electronic Technicians

3113 – Engineering Technicians

3115 – Quality Assurance Technicians

3119 – Science and Engineering Technicians NEC

Training Providers should assess the job role at the start of the Apprenticeship and make a decision as to which SOC code the job role applies this will be recorded on the ILR1 and should determine which SSC is relevant.

Semta

The successful apprentice depending on the programme undertaken will receive either:

- An Apprenticeship (England) or a Foundation Modern Apprenticeship (Wales) for Laboratory Technicians completion certificate from Semta

or

- An Advanced Apprenticeship (England) or a Modern Apprenticeship (Wales) for Laboratory Technicians completion certificate from Semta

This is separate from, and in addition to, those certificates awarded for the achievement of the individual components of the framework e.g. NVQ, Key Skills and Technical Certificate.

Providers are responsible for claiming the completion certificate from Semta and for providing evidence of completion of the mandatory and additional outcomes. They are also responsible for ensuring that the apprentice receives the completion certificate when awarded by Semta.

Semta's requirements for claiming the completion certificate:

A Certificate Request Form can be obtained from the Semta website:

www.semta.org.uk

- The Certification Request Form must be completed (please refer to the guidance document which accompanies the Certificate Request Form) and signed by the main centre contact, and returned for each individual apprentice, together with supporting evidence verifying that all mandatory outcomes have been met. It is the provider's responsibility to ensure that all relevant documentation is submitted.

If the above procedures are adhered to, certificates should be received within 15 working days from receipt of the application form.

Note: Please ensure that all apprentices are registered onto the appropriate Laboratory Technicians framework at commencement of training not only with the local LSC/DCELLS but also with Semta.

You can locate a copy of the Registration Request Form from the Semta website:

www.semta.org.uk

Cogent

The Key Operating Principles outline the national requirements for the award of Apprenticeship Completion Certificates.

The successful apprentice will receive an Apprenticeship Completion Certificate from the Cogent SSC. This is separate from, and in addition to, those certificates awarded for the achievement of the individual components of the framework, e.g., NVQs and Key Skills.

Providers are responsible for claiming the Apprenticeship Completion Certificate from Cogent SSC and for providing evidence of completion of the mandatory outcomes. They are also responsible for ensuring that the apprentice receives the Completion Certificate when awarded by the Cogent SSC.

Cogent's requirements for claiming the certificate are:

- Completion of the certificate request form (MA 2), which is supplied by Cogent SSC can be downloaded from www.cogent-ssc.com or by contacting:
- Kathryn Hough, Apprenticeship Administrator, Cogent SSC Ltd, Unit 5, Centre Park, Warrington, Cheshire, WA1 1GG
- Photocopies of the appropriate certificates, e.g. NVQ signed by the provider as copies of the original, confirming achievement of the mandatory outcomes in the framework.
- A copy of the ERR workbook signed by both provider and apprentice.

Certificates will be sent to the training provider within four weeks of Cogent receiving the request for certification together with the remittance.

6.2 Progression

The Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians provides the best possible preparation for working at level 2 within the sector. It may also, where appropriate, provide positive progression to Advanced Apprenticeship/Modern Apprenticeship or higher level work.

On completion of the framework the apprentice will be deemed suitable for one of the occupations listed below.

There are opportunities to work across the Semta/Cogent footprint both in the UK and Overseas.

Successful Apprentices/ Foundation Modern Apprentices should be able to undertake the occupational roles listed below.

Engineering Science: A&FMA	Bioscience: A&FMA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products • Laboratory Analysis Technician Analysis of samples after manufacture • Laboratory Technician (Process) Analysis of samples during manufacture • Laboratory Technician (metrology) Ensuring test equipment is maintained within measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Setting up of apparatus for school/ College/University experimentation • Laboratory Technician Maintenance Maintaining apparatus used for experiments <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Monitoring ionising radiation levels by direct measurement and analysing dosimeter equipment 	<ul style="list-style-type: none"> • Laboratory Technician (Human and Animal) Therapeutic and diagnostic testing • Laboratory Technician (Process) Analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Maintenance of instruments and medical devices) • Laboratory Manufacturing Technician Preparation of Biochemical batch stock <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

Within the above industries there are many opportunities to progress to supervisory or management roles. These opportunities will increase over the coming years as the impact of an ageing workforce takes effect.

There are opportunities for the continuation of professional development and to increase professional qualifications, these may include:

- Higher Education (Degree and Honours)
- Advanced Apprenticeship/Modern Apprenticeship
- Assessor and Verifier Awards
- NVQ Level 3 (in other related areas)
- Professional Qualifications
- Higher Level NVQs

The Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians provides the best preparation to achieve skilled technician level status within the industry. It may also, where appropriate, provide positive progression to Higher Education or Higher levels of working responsibility.

On completion of the framework the apprentice will be deemed suitable for one of the occupations listed in below.

There are opportunities to work across the Semta/Cogent footprint both in the UK and Overseas.

Successful apprentices/foundation modern apprentices could progress to:

Engineering Science: AA&MA	Bioscience: AA&MA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products – setting up test procedures to meet quality specifications • Laboratory Technician (Process) Devising analysis techniques and carrying out analysis of samples during manufacture • Laboratory Technician (metrology) Supervising the maintenance of test equipment to ensure it stays within metrology measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Working with teachers, lecturers and university staff to develop apparatus for school/College/University research and experimentation. • Laboratory Technician Maintenance Developing maintenance protocols for apparatus and equipment used for experimental research. <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Developing appropriate procedures for radiological protection and monitoring • Laboratory Analysis Technician (environmental science) Devising and carrying out appropriate sample testing of environmental contaminants <p>Petroleum:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of petro-chemical products 	<ul style="list-style-type: none"> • Laboratory Researcher/Technician development of human and animal therapeutic and diagnostic instruments and technical devices • Laboratory Technician (Process) Development of batch product and analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Development of Maintenance protocols for instruments and medical devices • Laboratory Manufacturing Technician Development of manufacturing protocols to ensure consistent manufacture quality <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests. <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Development of large batch production manufacturing processes • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

Within the above industries there are many opportunities to progress to supervisory or management roles. These opportunities will increase over the coming years as the impact of an ageing workforce takes effect.

There are opportunities for the continuation of professional development and to increase professional qualifications, these may include:

- Higher education (degree and honours)
- Assessor and Verifier awards
- NVQ Level 3 (in other related areas)
- Professional qualifications
- Higher level NVQs

7.1 Fact Sheet

Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians

What's involved?

An apprentice can expect to be doing work based learning with an employer and to be paid, either a wage if they are employed, or an allowance. The apprenticeship will include a National Vocational Qualification, key skills/functional skills and a 'knowledge based element or technical certificate as listed below.

Competence Based Element	Knowledge Based Element	Key Skills
NVQ Level 2: <ul style="list-style-type: none"> Laboratory and Associated Technical Activities 	Technical Certificate(s) Level 2: <ul style="list-style-type: none"> Certificate in Laboratory Technical Skills BTEC First Diploma in Applied Science 	<ul style="list-style-type: none"> Application of number level 1 Communication level 1 Information Technology level 1
		or Functional Skills <ul style="list-style-type: none"> Mathematics level 1 English level 1 Information Technology level 1

The decision on which competence based and knowledge elements will be studied will be made by the employer and/or training provider in discussion with the apprentice.

Entry requirements:

These frameworks do not impose any restrictions on entry such as minimum levels of qualification. However for entry onto the programme, candidates (16-24 and 25+) must be able to demonstrate the potential to achieve NVQ level 2 and have sufficient knowledge and ability to undertake training to achieve Key Skills at level 1 and be able to undertake a suitable technical certificate at level 2 .

Furthermore, candidates should have:

- Self motivation to succeed within the science industry
- A reasonable level of numeracy and literacy
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people

What type of job might an apprentice be doing?	
Engineering Science: A&FMA	Bioscience: A&FMA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products • Laboratory Analysis Technician Analysis of samples after manufacture • Laboratory Technician (Process) Analysis of samples during manufacture • Laboratory Technician (metrology) Ensuring test equipment is maintained within measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Setting up of apparatus for school/ College/University experimentation • Laboratory Technician Maintenance Maintaining apparatus used for experiments <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Monitoring ionising radiation levels by direct measurement and analysing dosimeter equipment 	<ul style="list-style-type: none"> • Laboratory Technician (Human and Animal) Therapeutic and diagnostic testing • Laboratory Technician (Process) Analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Maintenance of instruments and medical devices) • Laboratory Manufacturing Technician Preparation of Biochemical batch stock <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

Minimum Periods of Training:

The average length of stay for 16-24 year old apprentices on the Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians is 12 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competencies.

How long does the apprenticeship take to complete?

The average length of stay for 16-24 year old apprentices on the Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians is 21 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

Career progression after completing this apprenticeship

The Apprenticeship/Foundation Modern Apprenticeship for Laboratory Technicians Framework provides the best possible preparation to achieving laboratory operative status within the industry. It may also, where appropriate, provide positive progression to Advanced Apprenticeship/Modern Apprenticeship or higher level work.

Framework developed by:**Semta: the SSC for Science, Engineering & Technology**

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7.2 Fact Sheet

Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians

What's involved?

An apprentice can expect to be doing work based learning with an employer and to be paid, either a wage if they are employed, or an allowance. The apprenticeship will include a National Vocational Qualification, key skills and a 'knowledge based element or technical certificate as listed below.

Competence Based Element	Knowledge Based Element	Key Skills
NVQ Level 3: <ul style="list-style-type: none"> Laboratory and Associated Technical Activities 	Technical Certificate(s) Level 3: <ul style="list-style-type: none"> Certificate in Laboratory Technical Skills BTEC National Certificate in Applied Science BTEC National Diploma in Applied Science BTEC Diploma in Applied Science (QCF) BTEC Subsidiary Diploma in Applied Science (QCF) 	<ul style="list-style-type: none"> Application of number level 2 Communication level 2 Information Technology Level 2
		or Functional Skills <ul style="list-style-type: none"> English level 2 Mathematics level 2 Information Technology level 2

The decision on which competence based and knowledge elements will be studied will be made by the employer and/or training provider in discussion with the apprentice.

Entry requirements:

These frameworks do not impose any restrictions on entry such as minimum levels of qualification. However for entry onto the programme, candidates (16-24 and 25+) must be able to demonstrate the potential to achieve NVQ level 3 and have sufficient knowledge and ability to undertake training to achieve Key Skills at level 2 and be able to undertake a suitable technical certificate at level 3 .

Furthermore, candidates should have:

- Self motivation to succeed within the science industry
- A reasonable level of numeracy and literacy
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people

What type of job might an apprentice be doing?	
Engineering Science: AA&MA	Bioscience: AA&MA
<ul style="list-style-type: none"> • Laboratory Test Technician (Quality) Quality testing of manufactured products – setting up test procedures to meet quality specifications • Laboratory Technician (Process) Devising analysis techniques and carrying out analysis of samples during manufacture • Laboratory Technician (metrology) Supervising the maintenance of test equipment to ensure it stays within metrology measurement tolerances <p>Education:</p> <ul style="list-style-type: none"> • Laboratory Technician General Working with teachers, lecturers and university staff to develop apparatus for school/College/University research and experimentation. • Laboratory Technician Maintenance Developing maintenance protocols for apparatus and equipment used for experimental research. <p>Nuclear:</p> <ul style="list-style-type: none"> • Laboratory Technician (Health Physics) Developing appropriate procedures for radiological protection and monitoring • Laboratory Analysis Technician (environmental science) Devising and carrying out appropriate sample testing of environmental contaminants <p>Petroleum:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of petro-chemical products 	<ul style="list-style-type: none"> • Laboratory Researcher/Technician development of human and animal therapeutic and diagnostic instruments and technical devices • Laboratory Technician (Process) Development of batch product and analysis of samples during manufacture to ensure quality control • Laboratory Technician (Equipment) Development of Maintenance protocols for instruments and medical devices • Laboratory Manufacturing Technician Development of manufacturing protocols to ensure consistent manufacture quality <p>Chemicals:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Control and testing of chemical products • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests. <p>Pharmaceutical:</p> <ul style="list-style-type: none"> • Laboratory Technician Process Development of large batch production manufacturing processes • Laboratory Technician (Maintenance) Ensuring accurate testing results by calibrating equipment, verifying equipment functionality, preparing for quality tests.

Minimum Periods of Training:

The average length of stay for Advanced Apprentices/Modern Apprentices in the same age range (16yrs to 24 yrs), is typically 36 months. In practice, this is considered indicative as again the apprentices' progress will depend on the achievement of the required competences.

How long does the apprenticeship take to complete?

The average length of stay for 16-24 year old apprentices on the Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians is 36 months. In practice, this is considered indicative only, as the apprentices' progress will depend on the achievement of the required competences.

For those apprentices 25 years and above, the expectation is that their existing skills, knowledge and competence could significantly reduce the average times stated above.

Career progression after completing this apprenticeship

The Advanced Apprenticeship/Modern Apprenticeship for Laboratory Technicians Framework provides the best possible preparation to achieving technician status within the industry. It may also, where appropriate, provide positive progression to higher level work.

Framework developed by:**Semta: the SSC for Science, Engineering & Technology**

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Annex B

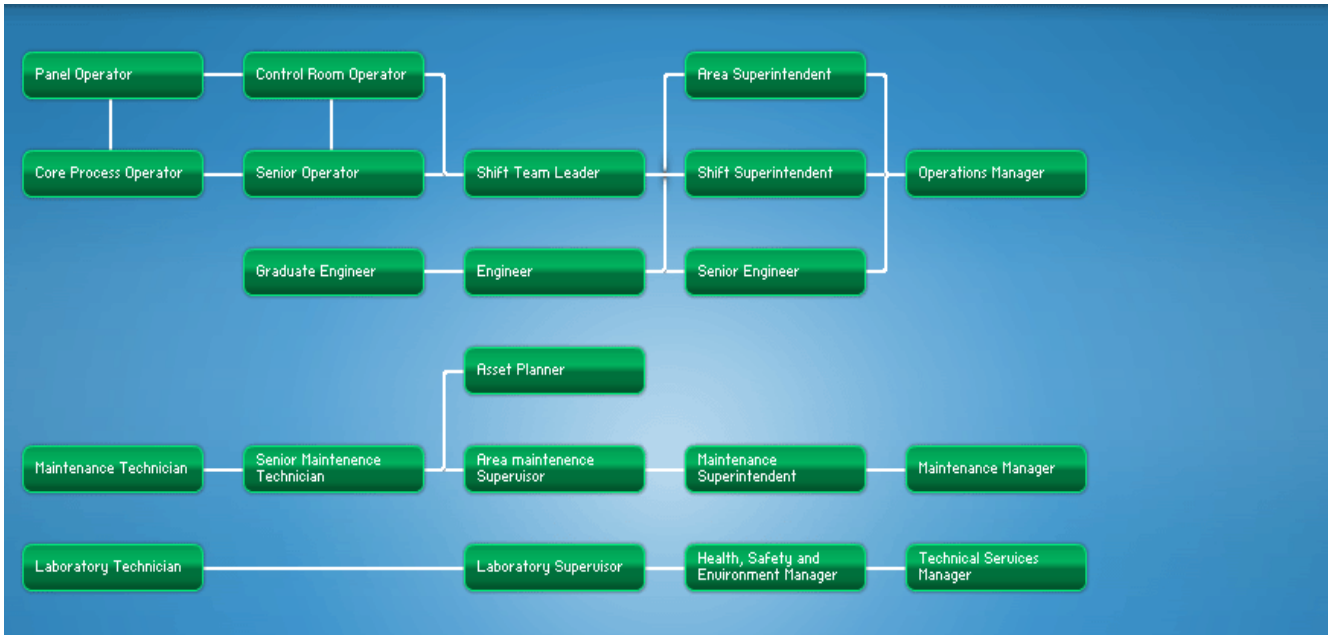
Career Pathways for the Cogent Industries



Career Pathway for Process Operators



Career Pathway for the Petroleum Industry



Career Pathway for the Pharmaceutical Industry



Career Pathway for the Chemical Industry

