

A Foundation Apprenticeship in Scientific Technologies (Laboratory Skills) at SCQF level 6

GN14 46



This document provides you with information you will require to deliver a Foundation Apprenticeship in Scientific Technologies.

If you need any further information please contact **Ian Lockhart**.

ian.lockhart@coagentskills.com

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Version Control			
Version Number	Revision(s)	Approved by	Date
1.0		Service Design and Innovation	January 2017
1.1	Changes to Framework units.	Work Based Learning Project Board	June 2017
1.2	Framework/unit codes confirmed, updated info on SQA requirements	Graeme Hendry	April 2018
1.3	Minor changes to wording, links to relevant guidance	Graeme Hendry	April 2018
1.4	Addition of SVQ Units from the new SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6	Graeme Hendry	February 2019

Background

One of the key recommendations of Sir Ian Wood's review on developing the young workforce was to *“develop better connectivity and co-operation between education and the world of work to ensure young people at all levels of education understand the expectations of employers, and that employers are properly engaged”* (Scottish Government response to “Developing the Young Workforce; 2015). The Scottish Government set ambitious targets to ensure this connectivity is delivered through a partnership of schools, colleges/training providers and employers.

Skills Development Scotland, alongside other partners, is working with industry to increase the range of work based learning opportunities for pupils in the senior phase of secondary schools. One of the ways this is being achieved is through the development of Foundation Apprenticeships and SDS is leading this initiative. Foundation Apprenticeships will allow pupils to gain vocational qualifications that combine sector specific skills alongside the knowledge that underpins these skills in a workplace setting while still at school.

The Foundation Apprenticeship in Scientific Technologies aims to give pupils in S5 and S6 the opportunity to develop the skills and knowledge to work towards a Scottish Vocational Qualification (SVQ) at SCQF Level 6 and to enter a career in the science based industries.

Pupils will achieve 3 units towards the SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF Level 6 and the National Progression Award (NPA) in Scientific Technologies at SCQF Level 6. This will enable them to progress onto a related Modern Apprenticeship in Life Science and Related Science Industries or a science route within higher education.

The Science Industry in Scotland

Life sciences and the related science industries are high-tech, innovative and highly diverse, spanning pharmaceuticals, medical technology, biotechnology, and industrial biotechnology and has applications across many other sectors. Through the development of innovative medicines, medical technologies and services, its businesses contribute to a stronger and fairer society, helping people enjoy better health, well-being and quality of life. Scotland has a thriving Life Sciences and the Related Science Industry Sector which consists of just over 630 organisations. It has an established network of over 40 pharmaceutical clinical trial support and contract research organisations.

These organisations employ approximately 32,000 people across the entire main Life Sciences and Related Science sector. These organisations contribute over £2.8 billion to the Scottish Economy annually, with a projected GVA growth rate of 8% which is four times the average rate for Scotland. Life Sciences and the Related Science Industries has been identified as a key sector in the Scottish Governments economic strategy in recognition of its international comparative advantage, high growth potential and capacity to boost productivity – with an aspirational GVA of £3bn by 2020.

Scotland has internationally recognised capabilities across Life Sciences and the Related Science Industries including:

- Drug discovery and development

- Contract research
- Medical technologies
- Stem cell research
- Specialised biomanufacturing
- Bioinformatics

Scotland is home to one of the largest concentrations of Pharmaceutical support networks in Europe, with more than 40 organisations working on clinical and non-clinical research. Historically, Life Sciences Scotland has focused mainly on the healthcare aspect but increasingly there are opportunities for the capacity and capability to be expanded to industrial, marine, plant, environmental and veterinary biotechnology (hence the term Related Science Industries).

Scotland also has a particularly strong reputation in the medical arena, for example:

- Cancer and cardiovascular research
- Neuroscience
- Genomics
- Proteomics and bioinformatics
- Stem cell research and regenerative technology
- Virology and immunology

The Scottish Life Sciences and the Related Science Industries is not only highly innovative and dynamic but it is also one of the most highly regulated sectors and faces increased scrutiny from regulators and increasing pricing pressures. The shape and size of industry has been changing over the last few years with large pharmaceutical companies becoming fewer and with Clinical Research Organisations, SMEs and microbusinesses forming the larger part of the Sector.

Since 2010 there have been over 100 new regulations implemented or amended. NHS and industry are increasing aligning to each other and need to understand each other's key challenges. For the Life Science Industries and the Related Science Industries to be sustainable it is more important than ever to increase profit margins, keep up to date with the latest technologies, deliver products that are value for money and having a flexible work force that can adapt and learn new skills, whilst maintaining standards and adhering to regulations. The larger organisations are re-structuring to mirror the successful SME structures. This type of set-up requires a different skill set, which includes broader and more innovative skill set than traditionally required.

In Scotland, there are over 7,500 roles at the Laboratory Assistant/ Technician trainee/ Trainee Scientist/Technician/Scientist/Technologist level within Life Sciences related operations. These roles span across industry, universities, schools, further education colleges and NHS. There are many different types of work employees in these roles carry out from sampling and preparing samples through to testing. When taking into account market growth and retirements in the sector, there will be a significant net requirement within each of these areas. Additionally, there are currently challenges in getting the right people with the right skills.

Why choose a career in the Science Industries?

- People with STEM (Science, Technology, Engineering and Maths) qualifications are in high demand from employers. By achieving good qualifications in STEM subjects, you will put yourself in a strong position in the jobs market.
- There are a huge variety of exciting careers available.
- Amongst organisations needing people with STEM knowledge and skills, 43% have reported difficulties recruiting staff, hence there is a great demand for more young workers with STEM skills and qualifications.
- There is an ageing population of workers in the science industries, meaning there is a high replacement demand.
- Estimates show that the UK science industry has a shortfall of around 40,000 new workers each year, resulting in great job security.
- On average, those working in STEM occupations earn 20% more than those working in other fields.

What is the Foundation Apprenticeship in Scientific Technologies?

The Foundation Apprenticeship in Scientific Technologies is for senior phase pupils and is typically delivered over S5 and S6. Pupils complete the NPA in Scientific Technologies at SCQF Level 6 and 3 Units of the SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6. The NPA provides the knowledge and an introduction to the skills that will help pupils to complete the SVQ units. These two parts form the Foundation Apprenticeship in Scientific Technologies.

Partnership

In a Foundation Apprenticeship, it is important to provide the right balance between the taught elements of the programme (the NPA) and the experiential, work based elements (SVQ). However, in doing an SVQ the fusion of knowledge and skills acquisition to develop competence need to be present.

Young people need to build real workplace skills that include skills that are specialist to the chosen career alongside workplace attributes that are more generic. It's only by being in a real work environment that this can be successfully achieved.

Foundation Apprenticeships are delivered by partnerships comprised of school, learning provider and employer. The learning provider is responsible for the approvals, delivery, assessment and quality assurance of the component units and qualifications. Where multiple learning providers are involved, arrangements between them will be detailed in an SQA Partnership Agreement.

The learning provider must have the appropriate SQA centre and qualification approvals in place before it can deliver the Foundation Apprenticeship.

For further support and guidance on SQA's approval and quality assurance processes, please see:

Information for Centres on Foundation Apprenticeships:

- https://www.sqa.org.uk/sqa/files_ccc/InformationForCentresFoundationApprenticeships.pdf

Information for Centres on SQA Partnership Agreements, where multiple learning providers are involved:

- https://www.sqa.org.uk/files_ccc/PartnershipAgreementTemplate.pdf

Employers may contribute to the partnership in a range of ways, from an industry challenge, to coaching and mentoring, to interviewing and selection. They may also be involved in the assessment of practice.

The Foundation Apprenticeship Product Specification, published by SDS, sets out principles for delivering an industry related Foundation Apprenticeship. The partnership will provide to SDS a clear outline of how these principles will be met, of the arrangements they have made to ensure how necessary interdependencies are developed and maintained and of the roles and responsibilities of each of the partners.

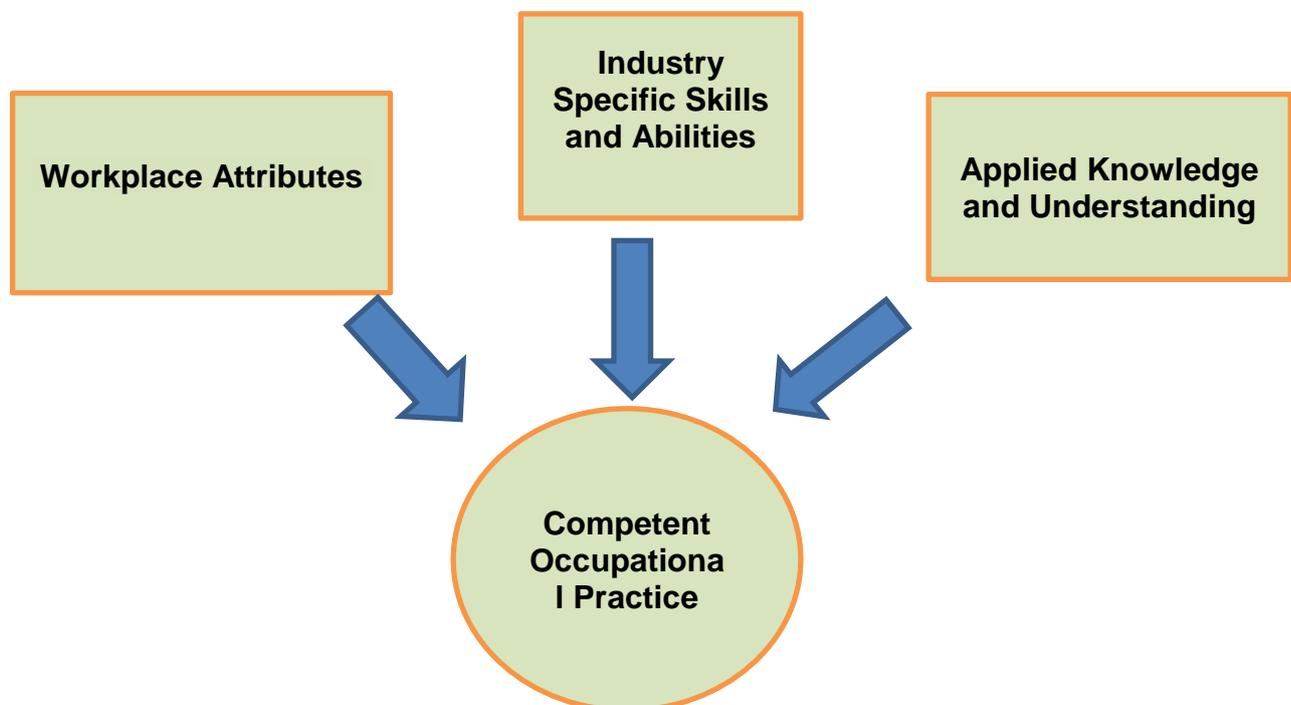
Pastoral Care

It is important to remember that the pupils who are taking part in this programme are still at school and as such there is a duty of care. This includes providing appropriate health and safety training and measures to ensure the safety of the young people and by also appointing a workplace mentor who will be a point of contact for the young person when they are out of the school environment.

Pastoral care in the Foundation Apprenticeship programme also includes making sure the placement is the right fit for the pupil and ensuring you listen to any concerns the pupil may have and providing the levels of personal support they might need to succeed.

Being aware that some young people are also carers might affect some of the decisions you make about which is the most appropriate placement for the pupil. This would include being aware of any restrictions that might be in place for travelling or for after school or holiday commitments.

The following diagram illustrates the outcome achieved for pupils and for employers from bringing together the essential elements of work based learning in a Foundation Apprenticeship.



How should the Foundation Apprenticeship in Scientific Technologies be delivered?

Delivery and assessment of the NPA in Scientific Technologies (SCQF Level 6) will typically start in S5 and will be delivered via a blended approach with the learning provider and in placement. The Foundation Apprenticeship in S6 will be predominantly delivered and assessed in the workplace.

NPA in Scientific Technologies at SCQF Level 6

This National Progression Award is designed to support the underpinning knowledge of the SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6. Typically, a minimum of 7 hours per week throughout S5 is spent on the Foundation Apprenticeship. Part of this time will be with the college/training provider and part with science employers in placement. Pupils will also learn some of the practical skills that are needed in the science industries.

The Foundation Apprenticeship is a work based learning apprenticeship and therefore there will be placement experience in S5 as well as in S6. For example, in terms 2 and 3 of the school year in S5 pupils could spend around 10 days familiarising themselves with the science industries. This would be facilitated by the college/training provider in collaboration with the employer. This experience would help pupils prepare for their placement and the SVQ assessment in S6.

SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF Level 6

Pupils will typically spend a minimum of 10 hours per week in a work placement throughout S6. The SVQ units are assessed in real life situations in the workplace. Assessment is carried out by an SVQ Assessor. Pupils are also expected to complete homework which includes a portfolio of evidence. This will all support their SVQ assessment.

Structure of the Foundation Apprenticeship in Scientific Technologies

Updated SVQ Units

As of January 2019, a new version of the SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6 has been accredited. The Foundation Apprenticeship framework has been updated to include these new units. The old versions of these Units may still be used, as indicated in the table below (grey text).

NB – Whilst the SCQF level and/or credits have changed for two of the units, the content and the outcomes that Foundation Apprentices will need to achieve, remain exactly the same.

GN14 46 Foundation Apprenticeship in Scientific Technologies			
Group Award Title	Unit Title	SCQF Level	SCQF Credits
GN13 46 National Progression Award (NPA) in Scientific Technologies at SCQF level 6	F3TD 11 Laboratory Safety	5	6
	HP9W45 Mathematics for Science 2	5	6
	HT6V46 Fundamental Chemistry: An Introduction	6	6
	HN8D 46 Experimental Procedures: Science	6	6
GP45 23 SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6 (part of)	J1J0 04 Follow Health and Safety Procedures for Scientific or Technical Activities	5	6
	or: FY9W 04 Follow Health and Safety Procedures for Scientific or Technical Activities	5	8
	J1GX 04 Carry Out Simple Scientific or Technical Tests Using Manual Equipment	6	7
	or: H00C 04 Carry Out Simple Scientific or Technical Tests Using Manual Equipment	6	7
	J1JN 04 Prepare Compounds and Solutions for Scientific or Technical Use	7	15
	or: H00J 04 Prepare Compounds and Solutions for Scientific or Technical Use	6	12
Foundation Apprenticeship Certification Unit	HE6E 04 Foundation Apprenticeship Certification Unit		0
TOTAL SCQF CREDIT POINTS			51 or 52

1 SCQF credit point is equal to 10 notional hours of learning.

Certification

SQA will issue the commemorative certificate for the Foundation Apprenticeship.

Learning providers must ensure that they have appropriate SQA approvals in place for the Foundation Apprenticeship and all mandatory components. Candidates must be entered and resulted for all relevant units for verification and certification purposes.

Once all contributing results are entered on SQA systems, the candidate's commemorative certificate will be produced.

SQA Awarding Body quality assurance requirements apply to the delivery of the SQA component units and group awards. Centres are required to sign up to the relevant Assessment Strategy for the SVQ and comply with all its requirements.

Science Placements for the Foundation Apprenticeship

Ideally, pupils will have the opportunity of 2 placements. The placements must be with science employers and not a simulated placement like a school or college laboratory.

Selection of pupils for the Foundation Apprenticeship in Scientific Technologies

Pupils need to be ready to work at SCQF level 6 (the same level as Higher). They need to have:

- a good level of written and spoken English.
- a good level of numeracy skills.
- an interest in working in a scientific technology environment.
- good problem-solving abilities.
- motivation to succeed within industry
- a willingness to work with due regard to Health and Safety.
- a willingness to wear personnel protective equipment.

These key points will be identified prior to the start of the Foundation Apprenticeship.

Equalities

We expect those involved in the development, recruitment and delivery of Foundation Apprenticeships to be pro-active in ensuring that no-one should be denied opportunities because of their age, disability, gender reassignment, marriage and civil partnership, religion or belief, sex or sexual orientation or pregnancy and that any barriers (real or perceived) are addressed to support all pupils. These are the protected characteristics of the Equality Act 2010 and training providers and employers must comply with this Act to ensure that applicants are not discriminated against in terms of entry to and promotion within the industry.

Our emphasis throughout is upon equality and diversity both for new entrants to the sector and opportunities for progression for the existing workforce.

Enhancement

The ability to think and write reflectively is a skill which will enhance pupils' abilities both across the curriculum and into the world of work. By undertaking the Foundation Apprenticeship in Scientific Technologies pupils not only develop skills and knowledge in work related science they also develop core skills valued by employers particularly those of communication, numeracy, problem solving and working with others. These transferable skills are necessary for working in a range of other related professions.

Recognition of prior learning

The recognition of prior learning (RPL) is the process for recognising learning that has its source in experience or in previous learning contexts. Using RPL to recognise informal learning involves learners reflecting on what they have learnt from their experience and how they can use this to support their current learning. Pupils may also have a range of voluntary or leisure activities they can use in a similar way. Examples of this might be the Duke of Edinburgh award or experience in youth groups.

Learners may already have SCQF credit points for formal learning and it may be possible to transfer some of this credit to another qualification. This is called credit transfer. Pupils completing a Foundation Apprenticeship may be able to transfer credit from this to further learning programmes.

Progression from this Foundation Apprenticeship

Following completion of this Foundation Apprenticeship at SCQF level 6 there are several options open to the successful candidate who wishes to continue their development in order to progress their career. There are opportunities to continue to undertake further vocational training or academic qualifications. These may include (but are not exclusive to) the following:

- Modern Apprenticeship in Life Science and Related Science Industries at SCQF level 6
- Modern Apprenticeship at SCQF level 7
- Technical Apprenticeship at SCQF level 8
- Higher National Certificate/Diploma in a science related subject
- Degree courses at college or university

For more information on careers in the Science Industries please go to <http://www.coagentskills.com/careers/>