

Skills
Development
Scotland

**Foundation Apprenticeship
in Scientific Technologies at SCQF level 6
Learning Provider Guide
to Support Employers**



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Foundation Apprentice

Aims

The aim of this guide is to support Learning Providers to identify and discuss with employers' appropriate activities for learners during a Foundation Apprenticeship work placement.

It provides the following information:

- **What are Foundation Apprenticeships?**
- **The definition of work-based learning in the context of Foundation Apprenticeships**
- **How a Foundation Apprenticeship is delivered**
- **How employers can support learners**
- **An understanding of the Scottish Vocational Qualification (SVQ) units within Foundation Apprenticeship qualifications**
- **Practical examples of work-based activities and evidence for the SVQ units within the Foundation Apprenticeship in Scientific Technologies at SCQF Level 6**
- **Links to useful resources**

“The Foundation Apprenticeship was a fantastic opportunity to gain scientific experience in the real world, as well as the classroom.”

Annabel, Foundation Apprentice



Annabel

Foundation Apprentice

What are Foundation Apprenticeships?

Foundation Apprenticeships are designed to provide school pupils with industry experience whilst gaining a work-based learning qualification at the same level as a Scottish Higher (SCQF Level 6).

A Foundation Apprenticeship is an industry-recognised qualification, designed to offer valuable insight and experience of the world of work. Delivered by learning providers in partnership with employers, knowledge gained is supported through a series of practical activities including industry projects or placements undertaken virtually and/or in person.

Foundation Apprenticeships at SCQF Level 6 are available in a wide range of subjects that are linked to the growth sectors of the Scottish economy:



Accountancy



Business Skills



Civil Engineering



Creative and Digital Media



Engineering



Financial Services



Food and Drink Technologies



Hardware and System Support



Scientific Technologies



Social Services and Healthcare



Social Services Children and Young People



Software Development

What is work-based learning and how does it apply to Foundation Apprenticeships?

For the purposes of this guide, work-based learning means learning that is directly linked to skills and knowledge required to operate competently in a workplace. A major component of a Foundation Apprenticeship is the sector specific work-based learning. In this context, work-based learning relates directly to the activities undertaken by learners whilst they are on a work-placement.

This provides the first-hand experience for learners to acquire sector specific skills, apply knowledge and reflect on their learning. These activities count towards the overall learning and assessment of the units from the Scottish Vocational Qualification (SVQ) within each Foundation Apprenticeship.

How is a Foundation Apprenticeship delivered?

Foundation Apprenticeships are chosen as a subject choice in S5 or S6 and taken alongside other National and Higher qualifications. Pupils work towards the Foundation Apprenticeship qualification over either one or two years.

Learning providers work alongside employers to develop the knowledge and skills learners need to meet all the outcomes of the Foundation Apprenticeship qualification. This includes the classroom-based teaching of knowledge and understanding elements of the Foundation Apprenticeship undertaken with the Learning Provider. This is combined with work-based learning opportunities with an employer to provide learners with the experiential learning they need to apply their learning directly in the workplace,

ultimately to meet the requirements of the SVQ units of the Foundation Apprenticeship qualification.

Learners attendance depends on whether they take part in a 1 year or a 2-year programme.

- 1 year = 1 day with employer and 1 day or 2 half days at college or training centre
- 2 years = 1st year – 1 day a week at college or training centre with some employer input = 2nd year = 1 day a week at work placement.

Attendance on the programme will be a mix of classroom-based activity and employer placement. The placement element is typically one day per week but can be flexible to meet the needs of the sector and employer for example, block intake.

Employer involvement

The involvement of employers is a critical aspect of Foundation Apprenticeships and includes:

- Providing learners with a work placement to enable them to gain valuable experience in the workplace
- Providing learners with appropriate work-based opportunities to enable them to develop their learning and skills
- Ensuring all work-based learning provided is based on current expertise, equipment, practices and processes
- Setting employer led projects industry challenge projects

Employers may also be involved in other activities, for example, the recruitment and selection process, guest speaking, coaching and mentoring, and in the assessment of practice of learners.

The learning provider meets regularly with employers to provide on-going support and ensure learners are being supported and are working on the right types of activities.

¹ The term 'learners' is used in this guide to refer to pupils.

Scottish Vocational Qualification units

It is important that employers understand the SVQ units within a Foundation Apprenticeship, as this will help them to provide learners with access to work-based activities that are relevant to the SVQ units they need to complete.

Within every Foundation Apprenticeship there are a number of SVQ units which relate to a particular occupational function, and which provide the standards upon which competence is assessed in the workplace.

SVQ units are derived directly from National Occupational Standards (NOS) which describe what an individual needs to do (performance criteria), know and understand (knowledge and understanding criteria) to demonstrate competence in the unit. Evidence (assessment) requirements specify the type and amount of evidence required for the unit and are developed by an Awarding Body to complete the unit development when it is used to form part of a qualification structure.

Learners must provide evidence they are competent across all criteria to meet the requirements of all SVQ units within the Foundation Apprenticeship. All evidence is assessed against the standards and leads to an overall judgment being made by an assessor on whether the learner is competent or not yet competent. Where a learner is found to be not yet competent in any part of the standards, they will be given the opportunity for further training and to provide further evidence for assessment at a later date.

Acceptable performance in a unit will be the satisfactory achievement of the standards set out in the SVQ unit specification. Every SVQ unit has knowledge statements which underpin competence.

About the assessment of SVQ units

Assessment is the process of evaluating an individual's attainment of knowledge, understanding and skills. Assessment of the SVQ units involves generating and collecting evidence of a learner's attainment of knowledge, understanding and skills and judging that evidence against defined standards.

The Guide to Assessment covers a wide range of assessment methods in unit assessments for school, college and workplace qualifications as well as external assessment for National Qualifications. There are three essential forms of assessment: observation, product evaluation and questioning. Assessment can also use a combination of some or all of the three forms. All assessment methods, such as a project or performance, can be classified under one or more of these forms.

SVQ units are assessed internally by centres, this means that work-place assessors are responsible for deciding whether evidence meets the standards for SVQ units. The assessors are identified by the centre, they are occupationally competent in the role and professionally competent in conducting work-based assessment (or working towards this). The internal assessment decisions are externally verified by the Awarding Organisation who offers the units.

Evidence must meet the following requirements:

| | |
|-------------------|---|
| Valid | The assessment method chosen will be appropriate to the standards being assessed. It will produce evidence relevant to the standards. |
| Authentic | The evidence will be the learner's own work. |
| Current | The evidence will exemplify the current level of the learner's performance. |
| Reliable | The assessment decision is comparable and consistent with other assessors within the centre. |
| Sufficient | The evidence will demonstrate competence over time (e.g. not just a single occasion). |



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Links to useful resources

Foundation Apprenticeship Guidance Note:

[Scientific Technologies Framework](#)

This document provides all the information needed to deliver the Foundation Apprenticeship in Scientific Technologies at SCQF Level 6.

[Developing the Young Workforce](#)

Work Placements Standard: This document sets out the expectations for a young person, school, employer, local authority and parent/carer, before, during and after work placements. Refer to this document for information to help improve the quality of learning in the workplace.

[SQA Guide to Assessment](#)

This guide is designed to provide support for everyone who assesses SQA qualifications. It covers the full range of SQA qualifications and is based around the principles of assessment, that all qualifications must be valid, reliable, practicable, equitable and fair. Refer to this document for information on unit content and standards, methods of assessment and acceptable evidence.

[FA Placement Options](#)

[Meta skills support documentation](#)

[Employer Welcome Pack](#)

This guidance has been developed to share best practice and support employers to get the best experience from their involvement in Foundation Apprenticeships.

Practical Examples

Examples of activities and evidence for the SVQ units: A Foundation Apprenticeship in Scientific Technologies (Laboratory Skills) SCQF level 6 (GN14 46)

These examples aim to support employers with identifying suitable work-based activities to develop the practical skills of S5 and S6 pupils during the work placement component of the Foundation Apprenticeship in Scientific Technologies (Laboratory Skills) at SCQF level 6 (GN14 46).

The Foundation Apprenticeship in Scientific Technologies (Laboratory Skills) at SCQF level 6 includes three mandatory

units from the SVQ in Laboratory and Associated Technical Activities (Industrial Science) at SCQF level 6. The SVQ units are delivered and assessed while on placement in the workplace:

- J1J0 04 Follow Health and Safety Procedures for Scientific or Technical Activities
- J1GX 04 Carry Out Simple Scientific or Technical Tests Using Manual Equipment
- J1JN 04 Prepare Compounds and Solutions for Scientific or Technical Use

The table below provides generic examples of typical work-based activities and examples of possible evidence which may support the development of the practical skills within each of the SVQ units. Please note, these are examples and are not intended to be prescriptive.

Some examples of activities and evidence are holistic therefore may cover several performance criteria (and knowledge and understanding) within a unit and/or across units, as opposed to aligning with a single performance criteria. This supports good practice in the holistic approach to assessment, which in turn reduces the volume of evidence required by learners and reduces bureaucracy in assessment.

It is important to note not all work-based activities may be suitable for a pupil to undertake (e.g. not an employee). For example, there may be a legislative reason a pupil/non-employee cannot conduct a particular activity within a workplace.

J1J0 04 Follow Health And Safety Procedures For Scientific Or Technical Activities

| Performance Criteria What the learner needs to be able to do to demonstrate competence within the unit | Examples of work-based activities which may support learners to develop the required practical skills in the unit | Examples of evidence which may support learners to demonstrate the practical skills in the unit (product evaluation, observation and questioning) |
|--|---|---|
| <p>P1 Ensure that your work is carried out in accordance with workplace procedures</p> | <ul style="list-style-type: none"> ■ Attending induction which covers initial sector specific workplace procedures and health and safety ■ Attending a presentation given by mentors which covers; PPE, First Aid and lab safety officers, evacuation procedures, etc ■ Conducting work activities | <ul style="list-style-type: none"> ■ Records of attending induction and training, including handouts used ■ Witness testimony from the person delivering induction and giving the presentation detailing the topics covered ■ Personal statement from the learner or a professional discussion with mentor to cover scope and knowledge and understanding points |

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| Performance Criteria | Examples of work-based activities | Examples of evidence |
|---|--|--|
| <p>P2 Accurately assess health and safety in relation to your work and the workplace</p> | <ul style="list-style-type: none"> ■ Undertaking a real-life or simulated event to assess health and safety, (scenario may include spillage of a hazardous substance and the subsequent processes thereafter) | <ul style="list-style-type: none"> ■ Records of the learner preparing for and undertaking the learning project activity (e.g. PPE) |
| <p>P3 Use safe practices and the appropriate personal protective clothing and equipment for the work</p> | <p>◀ See P1 (previous page)</p> | <p>◀ See P1 (previous page)</p> |
| <p>P4 Identify any breaches to health and safety procedures and report them to the appropriate person as soon as possible</p> | <ul style="list-style-type: none"> ■ Identifying and reporting breaches in health and safety within the working environment whilst undertaking your own duties | <ul style="list-style-type: none"> ■ Emails or personal statement from the learner reporting the breach and their actions thereafter in line with organisational procedures |
| <p>P5 Ensure that you maintain and tidy your work area to a standard of health and safety which is consistent</p> <p>P6 Prepare, maintain and use equipment and materials in accordance with manufacturer's instructions and local safety regulations</p> | <ul style="list-style-type: none"> ■ Maintaining a clean and tidy work area ■ Conducting operations in line with manufacturer's instructions and employer regulations ■ Disposing of waste materials in line with organisational procedures | <ul style="list-style-type: none"> ■ Records of relevant training attended ■ Records of waste disposed (e.g. log entries and emails) ■ Observation of learner undertaking the tasks |
| <p>P7 Recognise hazardous materials used in your work activities</p> | <ul style="list-style-type: none"> ■ Identifying correctly the hazardous materials used in own area of work ■ Conducting risk assessment and/or COSHH assessment | <ul style="list-style-type: none"> ■ Records of professional discussion with mentor ■ Copies of the completed risk assessment and/or COSHH assessment |
| <p>P8 Follow established procedures to protect yourself and others during work activities</p> | <ul style="list-style-type: none"> ■ Identifying, selecting and using the correct protection measures when conducting hazardous activities | <ul style="list-style-type: none"> ■ Observation or professional discussion detailing how the learner protected themselves and others during work activities |
| <p>P9 Follow the correct procedure when an emergency arises or is suspected</p> | <ul style="list-style-type: none"> ■ Following workplace emergency procedures in a real-time event or scenario (e.g. fire drill) | <ul style="list-style-type: none"> ■ Evidence of the learner evacuating a premise (e.g. personal statement or witness testimony) |

J1GX 04 Carry Out Simple Scientific Or Technical Tests Using Manual Equipment

| Performance Criteria What the learner needs to be able to do to demonstrate competence within the unit | Examples of work-based activities which may support learners to develop the required practical skills in the unit | Examples of evidence which may support learners to demonstrate the practical skills in the unit (product evaluation, observation and questioning) |
|--|---|--|
| P1 Develop and maintain working relationships with people which promote goodwill and trust | Evidence cross references with J1JO 04 (P1 & P3) <ul style="list-style-type: none"> ■ Attending induction which covers initial sector specific workplace procedures and health and safety ■ Attending a presentation given by mentors which covers; PPE, First Aid and lab safety officers, evacuation procedures, etc ■ Conducting work activities | <ul style="list-style-type: none"> ■ Records of attending induction and training – detailing the topics covered, including handouts used ■ Personal statement from the learner or a professional discussion with mentor to cover scope, knowledge and understanding points ■ Observation of learner carrying out own work |
| P2 Use safe practices and the appropriate Personal Protective Equipment (PPE) when doing scientific or technical activities | <ul style="list-style-type: none"> ■ Preparing to undertake a work activity by putting on industry specific PPE before commencing task (e.g. checking the pH of a solution using a pH meter) | <ul style="list-style-type: none"> ■ Records (observation) of the learner using appropriate PPE and preparing to undertake analysis (e.g. calibration of equipment and conducting the analysis) ■ Completed records of results of the analysis/lab tests ■ Photocopy or hard copy of electronic files and log entries |
| P3 Obtain the appropriate equipment and materials for the manual tests required | <ul style="list-style-type: none"> ■ Gathering all equipment needed to conduct a work activity (e.g. to check the pH of a solution using a pH meter, booking of samples into lab etc) | <ul style="list-style-type: none"> ▲ See P2 |
| P4 Conduct manual laboratory tests on samples in accordance with the correct procedures and techniques | <ul style="list-style-type: none"> ■ Conducting lab tests after checking standard operating procedures and under supervision of mentor/assessor | <ul style="list-style-type: none"> ▲ See P2 |
| P5 Record the results of manual tests in accordance with workplace procedures | <ul style="list-style-type: none"> ■ Recording the results from lab tests conducted in an appropriate and agreed format (e.g. on paper or electronic format) | <ul style="list-style-type: none"> ▲ See P2 |

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| Performance Criteria | Examples of work-based activities | Examples of evidence |
|---|---|--|
| P6 Dispose of waste items from manual laboratory tests in accordance with workplace procedures | <ul style="list-style-type: none"> ■ Disposing of any waste materials ■ Discussion with mentor / assessor prior to disposal to ensure compliance | <ul style="list-style-type: none"> ■ Records confirming the correct disposal of material (e.g. log entries and emails) |
| P7 Return equipment and materials that can be used for future testing to the correct storage location | <ul style="list-style-type: none"> ■ Returning the equipment and materials used ■ Checking and recording any malfunctions, replenishment of supplies as per workplace procedures ■ Discussing with mentor / assessor prior to activity to ensure correct storage | <ul style="list-style-type: none"> ■ Records indicating materials have been returned correctly ■ Records detailing any malfunctions recorded (e.g. log entries and emails) |
| P8 Communicate the required information laboratory activities to authorised people in accordance with departmental and organisational procedures | <ul style="list-style-type: none"> ■ Providing information of the testing done by verbal report and a written method (e.g. paper or electronic record and entries in own laboratory book) | <ul style="list-style-type: none"> ■ Personal statement providing details of the verbal report, and product evidence of the written method (e.g. emails, database screenshots, entries into laboratory information systems) |

Notes

A holistic approach has been taken to provide examples of activities and evidence which cover performance criteria within and across units. This promotes efficient and effective gathering of evidence.

Observation, video evidence and/or the use of voice recording software for professional discussions may be appropriate in this unit.

Guidance on simulation can be found in the Assessment Strategy. Where permitted, simulation should only be undertaken in a minority of situations, for example where there is a potential risk to the learner or others. To be effective, simulation must succeed in recreating the atmosphere, conditions and pressures of the real situation.

J1JN 04 Prepare Compounds And Solutions For Scientific Or Technical Use

| Performance Criteria What the learner needs to be able to do to demonstrate competence within the unit | Examples of work-based activities which may support learners to develop the required practical skills in the unit | Examples of evidence which may support learners to demonstrate the practical skills in the unit (product evaluation, observation and questioning) |
|--|---|---|
| P1 Ensure that your work is carried out in accordance with workplace procedures | Evidence cross references with J1JO 04 (P1 & P3) <ul style="list-style-type: none"> ■ Attending induction which covers initial sector specific workplace procedures and health and safety ■ Attending training which covers; PPE, First Aid and lab safety officers, evacuation procedures etc | <ul style="list-style-type: none"> ■ Records of attending induction and training – detailing the topics covered, including handouts used ■ Personal statement from the learner or a professional discussion with mentor to cover scope, knowledge and understanding points ■ Observation of learner carrying out own work |
| P2 Use safe practices and the appropriate personal protection equipment (PPE) when doing scientific or technical activities | <ul style="list-style-type: none"> ■ Preparing to undertake a work activity by putting on industry specific PPE before commencing task (e.g. checking the pH of a solution using a pH meter) | Evidence cross references with J1GX 04 (P2) <ul style="list-style-type: none"> ■ Direct observation of learner using appropriate PPE (this observation may provide evidence for other performance criteria in this unit) |
| P3 Use balances for accurately weighing out materials | <ul style="list-style-type: none"> ■ Preparing sodium chloride solutions of differing molarity from solid sodium chloride or other as required (e.g. 1M and 0.1M using an appropriate balance) ■ Using and familiarising with differing weighing accuracies (grams and milligrams) and graduated cylinders and/ or beakers to measure the solvent (water) | <ul style="list-style-type: none"> ■ Product evidence indicating the calculations used to determine the amount of solid and solvent required to prepare the required concentration ($c = n \div v$) ■ Evidence of preparing the solution from solid. Preparations of two differing concentrations will provide specific evidence as required in the scope of this unit e.g. scope 2, 4, 5 and part of 6. |
| P4 Measure out required concentrations of liquids for scientific or technical use | <ul style="list-style-type: none"> ■ Preparing a 0.5M sodium chloride solution by dilution from the 1M stock solution (prepared earlier) using volumetric flasks and pipettes | <ul style="list-style-type: none"> ■ Product evidence indicating the dilution calculations used to determine the volume of stock solution and solvent required to prepare the required concentration ($C1V1 = C2V2$) ■ Evidence of preparing a solution from a stock solution (observation) |

| Performance Criteria | Examples of work-based activities | Examples of evidence |
|--|--|---|
| <p>P5 Measure specific volumes of liquids and weights of solids for scientific or technical use</p> | <p>◀ See P3 (previous page)</p> | <p>◀ See P3 (previous page)</p> |
| <p>P6 Communicate the required information about the work done, in accordance with departmental and organisational procedures</p> | <ul style="list-style-type: none"> ■ Providing information on the preparation by giving a verbal report and recording the method in own laboratory book | <ul style="list-style-type: none"> ■ Cross references with J1GX 04 P8 personal statement providing details of the verbal report, and product evidence of the written method (e.g. emails, databases, entries into laboratory information systems) ■ Written record of weights and volumes used to prepare the required solutions (e.g. photocopy of a section of their laboratory book) |

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