Skills Development Scotland

SAAB | Scottish Apprenticeship Advisory Board

MODERN APPRENTICESHIP IN ENGINEERING - TECHNICAL SUPPORT

Overview

This apprenticeship is designed to support the development of apprentices working in a wide range of Engineering and Manufacturing settings in roles such as Technical Support- Design Office; Network Design Technician; Business Support; Design and Drafting Technician; Automation Engineer; Technical Support Analyst and Control Engineer.

The goal of the apprenticeship is to enable apprentices to develop and apply the required skills and knowledge to provide support for all areas of the technical support function to design and produce technical drawings, models and specialist technical support.

Duration

The expected completion time for this apprenticeship is 48 months for new entrants.

Level

SCQF Level 7. More information on SCQF can be found **here**.

Qualification achieved

EAL Diploma in Engineering at SCQF Level 7 (Technical Support Pathway) R807 04; or

SQA Diploma in Engineering: Engineering Technical Support at SCQF Level 7 GV30 47

and

NC/HNC in an Engineering or Engineering related discipline at SCQF 5 or above

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INTRODUCTION

Apprenticeships aim to provide mixture of on-the-job (in the workplace) and off-the-job (through day or block release) learning to enable people to develop the knowledge, skills and expertise required by businesses today.

Designed by employers to attract new talent, tackle critical skills shortages and develop existing workforces, apprenticeships can both help people to enter the world of work and develop the skills of those already in work

About Scottish Apprenticeships

Scottish Apprenticeships are for everyone and reflect the Government's commitment to promoting a world-class, inclusive, work-based learning system. They are administered by **Skills Development Scotland,** the National Skills Agency. Skills Development Scotland has a remit to contribute to the nation's economic growth and it does this by supporting individuals and businesses alike to develop and apply their skills in the workplace.

The Scottish Apprenticeship system focuses on three specific key elements:

- the **learning outcomes** aligned to the specific work situations of an apprentice's job;
- the **knowledge, skills and behaviours** that will be developed by apprentices, enabling them to work competently and confidently;

  and
- the **meta-skills** that will be developed by apprentices to help them to manage themselves, collaborate with others and interact with change.

Throughout their apprenticeship, apprentices will be supported and guided by their employer, mentor and learning provider, and will have their growing competence measured by an assessor to ensure they can perform their job to the standard required. On successful completion, apprentices will be awarded nationally recognised competence-based and/or professional qualifications in their chosen field.

About this standard and framework document

Working in partnership with businesses and stakeholders, this standard and framework document has been written to provide apprentices and employers with an overview of the key features of this apprenticeship. Please read this alongside the Engineering Technical Support Occupation Profile.

Find further information on apprenticeships here!

ROLE OF THE APPRENTICE

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This apprenticeship has been designed for use to support Engineering roles across different sectors such as engineering construction, land based engineering, energy and utilities, offshore oil & gas, rail infrastructure. This apprenticeship is designed to support entry level technical support roles across the breadth of engineering and manufacturing sectors.

There are a number of roles available at this level, such as Technical Support - Design Office; Network Design Technician; Business Support; Design and Drafting Technician; Automation Engineer; Technical Support Analyst and Control Engineer.

All of these roles require employees to apply technical knowledge and skills across a range of work situations in a sector with changing technologies, increasing digitalisation and a strong move towards net zero, and demonstrate a clear understanding of regulatory and legislative frameworks as well as the requirements of their own role and the goals of the organisation.

Apprentices will be expected to achieve the following **core learning outcomes** by the end of their apprenticeship.

- Perform Core Engineering activities
- Understand good environmental practices, the importance of sustainability and how to apply this within your area of responsibility
- Develop meta-skills and personal professionalism through reflective practice, goal setting and active learning to improve own performance

Apprentices are also expected to achieve **a minimum of three** of the following **optional learning outcomes.**

- Produce engineering drawings and design data using Computer Aided Design (CAD)
- Apply approved industry quality control processes and methods to support delivery of products and services
- Inspect and test engineering assets to ensure safety and functional requirements are met.
- Support the development of new and revised products by providing design-led solutions to problems
- Apply methods and principles to engineering project management
- Lead engineering activities to enable delivery of products and services
- Start up engineering processes to enable engineering assets to be produced
- Control engineering processes to produce quality engineering assets
- Close down the engineering process on production of an engineering asset
- Replace faulty and end of life engineering assets to optimise performance and life
- Install engineering assets to meet specified requirements
- Commission engineering assets to functioning according to design and purpose
- Decommission engineering assets out of active service

DEFINING KNOWLEDGE, SKILLS AND BEHAVIOURS

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This apprenticeship is designed to develop apprentices' careers by developing their knowledge and understanding of their role, by increasing their skills and by enhancing their behaviours.

Employers from a variety of sectors have helped to identify the key knowledge, skills and behaviours that apprentices working in Engineering need to develop. Throughout their apprenticeship, apprentices should be regularly assessed to ensure they can demonstrate both know-how and ability in each of these areas; a high-level summary is provided below.

A full list of the **knowledge, skills and behaviours** can be found in the associated Engineering Technical Support Occupational Profile.

Knowledge

- Engineering principles
- Project management
- Legislation and codes of practice
- Processes for continuous improvement
- Safe systems of work
- Risk and impact assessment for engineering activities
- Impact of new technologies and net zero
- Quality control, assurance and improvement processes

Skills

- Contributing to Engineering design
- Producing Engineering drawings using CAD
- Diagnosing and resolving faults
- Inspection and testing
- Project management
- Planning and scheduling
- Communication and collaboration

Behaviours

- Attention to detail
- Curiosity
- Adaptability and resilience
- Critical thinking
- Communication
- Problem solving

DEFINING META-SKILLS

Meta-skills sit alongside and complement technical knowledge, skills and behaviours. As technology, society and the way we work change at an ever-increasing pace, so meta-skills are the over-arching and future-focused attributes that enable other skills to be developed through consideration, reflection and implementation.

Meta-skills support improved performance and productivity, greater adaptability and resilience to change. For apprentices, meta-skills are a critical asset, supporting their ability to cope and excel in the face of change, to solve problems, to collaborate with others and to create successful futures. There are three categories, each with four meta-skills.

Managing yourself - focus, integrity, adaptability and initiative

Connecting with others - communication, feeling, collaboration and leadership

Interacting with change - curiosity, creativity, sense-making and critical thinking

Developing meta-skills in Engineering

Supported by their employer, mentor and learning provider, apprentices should consider, practise and reflect on their use of meta-skills during their apprenticeship, building those skills to enhance their personal effectiveness in their present role and their future careers.

Managing yourself

A clear **focus** is required to work carefully, correctly and to avoid distraction, it's essential for complex tasks, when using dangerous equipment or machinery and when fault finding and analysing data; **integrity**, being honest and trustworthy, and true to company values is essential for open and honest analysis of failures, during investigations or when challenging an issue with colleagues or managers and dealing with customers; **Initiative**, thinking independantly and working proactively is key when delivering improvements; when unexpected problems or challenges arise, as well as taking forward self-development and learning. **Adaptability** is key when work requirements and standards change and when a response is needed in an emergency situation.

Connecting with others

Clear and concise **communication** is crucial for safe and effective delivery of services and products to customers, being able to share information and instructions with others but also listening and relationship building with colleagues and stakeholders; **collaboration**, working effectively with colleagues is vital when completing complex tasks or when faced with technical problems as well as when working with customers and contractors; and strong **leadership** qualities are developed through helping and directing newer colleagues or apprentices and by taking responsibility for tasks. **Feeling** is needed when dealing with colleagues and customers and where departments/ public have submitted complaints.

Interacting with change

A keen sense of **curiosity** is critical when learning new things, learning better ways of doing things and for career development, as well as when problem solving; **creativity** is required when dealing with new challenges or working to improve processes: **sense-making** is key when interpreting complex instructions or technical drawings, analysing data and root cause analysis, and breaking tasks into simpler, manageable steps. **Critical thinking** is key when undertaking diagnostics and coming up with solutions when fault finding and requires self-awareness and reflection to challenge systems and procedures

KEY ROLES AND RESPONSIBILITIES

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A number of different parties will be involved in the delivery, management and assessment of a successful apprenticeship. As well as the apprentice, key roles include employer, mentor, learning provider and assessor. Each has a specific set of responsibilities during the apprenticeship.

Apprentice Responsibilities

In their day-to-day roles, apprentices have the same responsibilities to their employer as any other employee but they have additional and specific responsibilities for their own learning and development too.

- Agreeing a learning/ development plan with all parties involved and following it through
- Committing to learning throughout the duration of apprenticeship
- Participating in progress meetings with employer and learning provider representatives
- Participating in off-the-job learning where required
- Reflecting on performance and on development of skills, knowledge and behaviours required of the role
- Agreeing new goals to progress learning with all parties involved

Employer Responsibilities

- Providing apprentices with a contract of employment, a job description and an induction Programmee
- Paying apprentices in line with company policy, current legislation, fair work principles, and equality and diversity expectations
- Ensuring a working environment that is free from discrimination, bullying and harassment
- Agreeing learning needs and a learning and development plan with the learning provider and apprentices including
    - agreeing when off-the-job learning will be required and releasing apprentices for this as required
    - making on-the-job learning arrangements
    - identifying additional support requirements and agreeing actions to implement these
- Providing a quality work-based learning environment for apprentices, including the facilities and training necessary to demonstrate competence and succeed in the apprenticeship
- Providing the support of a mentor, who has relevant industry experience and is familiar with the employer's business, to support apprentices' development
- Contributing to the ongoing assessment of occupational competence, including observing performance, verifying evidence and profiling meta-skills
- Meeting with apprentices and learning providers to review apprentices' progress and set future goals
- Providing an environment that supports apprentices to take responsibility for their own learning and development
- Supporting and encouraging apprentices during their apprenticeship
- Recognising the achievements of apprentices in career management and progression
- Providing constructive feedback to the learning provider on the quality of their service delivery to inform continuous improvement of both the Scottish Apprenticeships system and apprentices themselves

KEY ROLES AND RESPONSIBILITIES

Mentor Responsibilities

- Helping new apprentices orientate into the workplace
- Providing information, advice and guidance relating to the learning and assessment aspects of the apprenticeship
- Supporting apprentices to define meta-skills in their shared work context
- Working with apprentices, employers and learning providers to ensure problems are resolved quickly
- Acting as an expert witness for apprentices
- Providing support to apprentices as they adjust to the workplace and progress in their career

Learning Provider Responsibilities

- Providing an appropriate apprenticeship programme for apprentices and employers
- Agreeing the learning needs of the apprentices with both the apprentice and the employer
- Agreeing when off-the-job learning will be required and defining roles and responsibilities for this with relevant parties
- Ensuring apprentices have access to the best quality learning opportunities available
- Ensuring apprentices and employers fully understand the principles and processes of competence-based assessment
- Registering apprentices through MA Online and with relevant awarding bodies, sector skills organisations and Skills Development Scotland as appropriate
- Compiling and agreeing learning and development plans and assessment plans with apprentices and employers
- Completing assessment records and submitting records and evidence for verification/moderation
- Reviewing apprentices' progress at regular intervals with the employer
- Supporting apprentices to develop their reflective practice
- Advising apprentices who to approach for support, advice and encouragement both within and outwith the workplace
- Seeking and providing feedback from and to employers and apprentices to inform continuous improvement of the Scottish Apprenticeships system and apprentices themselves

Assessor Responsibilities

- Meeting with apprentices, mentors and employers to plan learning and review progress
- Monitoring apprentices' progress against learning and development plans
- Observing and assessing apprentices in the workplace and judging whether their work meets the competence requirements set by the qualification awarding body
- Assessing different types of evidence from apprentices
- Providing constructive feedback on performance and offering suggestions for improvement
- Maintaining current knowledge of industry standards and seeking innovative new methods of work-based learning delivery

BEFORE THE APPRENTICESHIP STARTS

The recruitment of apprentices is primarily the responsibility of the employer and, before an apprenticeship starts, consideration should be given to entry requirements and also to ensuring that the workplace adheres to fair work, inclusion and diversity principles.

There are no formal entry requirements for this apprenticeship however, employers can also consider existing workplace skills and experiences, where apprentices are either changing careers or upskilling. Being open to alternative assessment methods and relevant experience, instead of qualifications, can help to broaden the pool of potential applicants.

Recognition of Prior Learning

Individuals applying for an apprenticeship will undergo selection based on the employer's existing HR processes. Learning providers should take account of this and liaise with employers to provide advice and guidance on any RPL and experience that will be accepted for entry onto the programme.

It is recommended that a flexible approach to RPL is adopted, on a case-by-case basis, with all relevant experience as well as any previous qualifications considered. Learning providers should always consider how they can best recognise apprentices' prior learning to minimise repetition of content.

You can find more information on RPL **here**.

Apprenticeship agreement and employment status

All post-school apprentices must hold a contract of employment for the period of the apprenticeship.

In addition, an apprenticeship agreement, confirming the commitment of the employer, the apprentice and the learning provider to the agreed apprenticeship must be signed by all parties. This agreement forms part of the individual employment arrangements between the apprentice and the employer; and of the learning arrangements between the learning provider, the employer and the apprentice.

Registration and certification

Registration and certification of apprenticeships is undertaken through Modern Apprenticeship Online.

It is the responsibility of the learning provider to ensure that the registration of apprentices is completed within four weeks of the start of their apprenticeship.

Fair work, inclusion and diversity

The Scottish Apprenticeships system aims to embed fair work principles. Fair Work First is the Scottish Government's flagship policy for driving high quality and fair work across the labour market in Scotland by applying fair work criteria to grants, other funding and contracts being awarded by and across the public sector, where it is relevant to do so. Through this approach the Scottish Government is asking employers to adopt fair working practices, specifically:

- appropriate channels for effective voice, such as trade union recognition;
- investment in workforce development;
- no inappropriate use of zero hours contracts;
- action to tackle the gender pay gap and create a more diverse and inclusive workplace; and
- payment of the real Living Wage.

Further guidance on Fair Work First is available from https://www.gov.scot/publications/fair-work-first-guidance-support-implementation/

The design and development of Scottish Apprenticeships aims to embed these principles in practical ways by including opportunities for feedback from apprentices as well as the availability of clear pathways into future opportunities beyond the apprenticeship itself.

Protected characteristics

The Equality Act 2010 includes nine protected characteristics, which are age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, and sex and sexual orientation. It is against the law to discriminate based on these protected characteristics. Skills Development Scotland is a Corporate Parent and, to that end, includes 'care experienced' in a similar way to protected characteristics in all its funded programmes and services.

Attracting the best people into apprenticeships involves ensuring that barriers are removed. Receiving the right support at the right time unlocks the potential of people who could otherwise be denied the opportunity to go on and become valued employees. Supporting people to feel confident about disclosing their protected characteristics in a safe and respectful way allows employers and learning providers to put the right conditions in place to unlock that potential; the right time for this is often at the start of an apprenticeship or even at the recruitment stage. In practice, it might involve ensuring that reasonable adjustments are made to accommodate apprentices, where that is possible and to help them make the most of their apprenticeship journey. Examples might include (but are not limited to) supporting people with sensory impairments, supporting people for whom English is not their first language and supporting people who are care experienced (for example, through fostering, adoption or residential care).

Diversity in Engineering

Evidence shows that women tend to be under-represented within the Engineering sector, although this can vary by job role. We also know that some groups are more likely to face barriers to employment, for example, disabled people, care experienced people, people from ethnic minority groups, and/or people with caring responsibilities. Recruitment and delivery of this framework should take into account the need to be flexible and adapt to support the different needs of learners. Recruitment and delivery of this framework should take into account the need to be flexible and adapt to support the different needs of learners.

Once the apprenticeship starts, there are a number of key considerations, tasks and milestones that apprentices, employers, learning providers, mentors and assessors should undertake to optimise a successful outcome for all parties.

Work-based Learning

Work-based learning – aligned to and assessed against both the **learning outcomes** and the **knowledge**, **skills and behaviours** of the apprenticeship – is the central and most significant component of an apprenticeship and is based on apprentices' real-life experiences in the workplace. Work-based learning is a partnership between apprentice, employer and learning provider and all apprentices must have the support of a mentor in the workplace.

Get more information on work-based learning **here.**

Meta-skills Development

This apprenticeship includes a learning outcome that provides opportunities to develop meta-skills. To effectively develop the meta-skills outlined earlier, apprentices must first understand what they are and how they might apply them in their role. To help with this, a simple exercise to define what meta-skills mean in their role (in language that both apprentice and employer are comfortable with) should be used. This will allow apprentices to consider their own meta-skills profile and which meta-skills they might need to develop or apply in order to perform effectively at work.

Setting development goals, action planning and regularly reflecting on progress will help apprentices to develop their meta-skills and it is vital to provide the time and space for reflections to take place. Naturally occurring opportunities to discuss and reflect on meta-skills might include inductions or performance management, career development and performance review sessions.

Delivery of Training

Consultation indicated that learning for this apprenticeship should take place primarily within the workplace by aligning work activities to the apprenticeship outcomes. At the same time, off the-job learning should also be provided to enable the apprentice to achieve a relevant National Certificate or Diploma qualification at SCQF L5 or above (unless the apprentice already holds this qualification). To support candidate progress through the apprenticeship standard content, and in meeting the overall apprenticeship standard for engineering, candidates are expected to achieve a minimum level of competency, knowledge and understanding in basic engineering practice and principles before moving on to more complex components within the standard.

There is no mandatory or statutory time allocation for the off job period of training for this apprenticeship, but off-the-job training time should be sufficient for the apprentice to undertake both the introductory skills qualification and the NC/HNC relevant to the apprenticeship. The time required for this will vary based on the prior experience and qualifications of the apprentice. Providers and Employers are expected to work collaboratively to ensure the off-job support is satisfactory and meets the needs of the apprentice. Off-the-job training arrangements are likely to combine elements of block-release, day-release and online learning.

A learning and development plan and an assessment plan should be developed to identify any additional needs and provide apprentices with the appropriate support or adaptations required to successfully complete their apprenticeship.

Approaches to Assessment

Apprentices are expected to provide evidence of meeting the learning outcomes and the knowledge, skills and behaviours required of this apprenticeship; also, evidence to demonstrate that they are competent in the described work situations in the workplace. It is important for apprentices to recognise how they have developed their skills, attributes and knowledge understanding along the way, and where these still need to be further developed. The competence and knowledge of apprentices is assessed according to requirements as set out in the Overarching Assessment Strategy for competence-based qualifications and also the specific Assessment Strategy requirements for the Diploma in Engineering at SCQF level 7

The key assessment methodologies for this apprenticeship are **observation, questioning, the use of witness testimony and examination of product evidence. Professional discussion** may also be used in appropriate circumstances. Assessment of competence will take place in the workplace with minimal simulated performance allowed as set out in Diploma in Engineering at SCQF level 7 Assessment Strategy. **Direct observation** will be by watching and observing apprentice performance and the use of questions as part of assessment may be oral or written The use of **witness testimony** may also be used where a work colleague or mentor may provide evidence of apprentice performance and be added to any portfolio of evidence for assessor review.

These assessment methodologies require apprentices to build and develop a portfolio of evidence through work and engage in reflective practice on their learning and skills development throughout their apprenticeship through professional dialogue between apprentices and mentors, employers and learning providers.

Holistic Assessment

The holistic approach allows larger pieces of work to evidence a number of learning outcomes, rather than a piecemeal process of finding separate evidence for each outcome and/or its associated knowledge, skills and behaviours. Work-based projects or problem-based activities often provide the richest opportunities for holistic assessment. Assessment of the common learning outcomes will be done in parallel with assessment of technical skills.

Assessment should be undertaken both in a controlled environment and through work related activity depending on what is being assessed, however most assessment should take place in the workplace.

Quality assurance

Skills Development Scotland is responsible for making sure all funded learning is of high quality and benefits the apprentice. A quality assurance framework is in place to cover the delivery of work-based learning in an apprenticeship and is designed to demonstrate how effectively learning providers and employers support this by ensuring apprentices:

- Receive appropriate support and guidance to enable them to become successful apprentices and confident individuals;
- Receive quality learning and develop their skills to achieve their learning goals;
- Are treated with dignity and respect in a way that promotes equality and inclusion; and
- Work towards successful outcomes, leading to future employment or further appropriate career progression.

The relevant awarding and accreditation bodies will undertake the quality assurance of the assessment of competence-based and professional qualifications. qualifications

Qualification Requirements

Safe and Common Practice

Introductory Engineering Skills Qualifications covering safe and common practice are as follows:

- SVQ Performing Engineering Operations at SCQF Level 5-GR5N 22
- SVQ Performing Engineering Operations at SCQF Level 5 –GR6W 45
- SVQ Land-based Engineering (Agriculture) at SCQF level 5 GP6K 22
- SVQ Performing Industrial Operations at SCQF level 5 -GJ9A 22
- SVQ in Network Construction Operations (Water) – Repair and Maintenance at SCQF Level 5 GR7D 22

Apprentices opting for having their work experience and learning recognised as an alternate to achieving an Engineering qualification at SCQF level 5 would be expected to have a minimum of **3 years current engineering-based work experience** which is fully supported by an employer statement and summary outlining the candidate's engineering knowledge, skills and competence. The 3 years' experience must have taken place within the previous 10 years.

Competency Based Qualification

Through their apprenticeship, apprentices must complete one of the following competence-based qualifications,

EAL Diploma in Engineering at SCQF Level 7 (Technical Support Pathway), R807 04; or

SQA Diploma in Engineering: Engineering Technical Support at SCQF Level 7, GV30 47

These qualifications bring together the development and assessment of all the learning outcomes and knowledge, skills and behaviours required of the role in a single qualification. It includes meta-skills development and assessment, which are integrated with technical skills.

Additional Knowledge Requirements

In addition to attaining the above noted competence-based qualification, apprentices should attain, unless already held**, National Qualification in an Engineering discipline.** This can be either a National Certificate at either SCQF Level 5 or Level 6, or a Higher National Certificate at SCQF Level 7 as deemed most appropriate by the employer and apprentice to support their in-work role, knowledge, theory and practice.

The apprentice is also required to achieve a minimum level of competency, knowledge and understanding in basic engineering, practice, and principles before moving on to the Diploma in Engineering at SCQF level 7 and the National Certificate or HNC components within the standard. This will be achieved by attainment of an accredited certificated engineering related vocational qualification at minimum level of SCQF 5 or the apprentice having commensurate work experience, knowledge and competency in an engineering discipline at the same minimum equivalent level.

Pathways and Progression

A successfully completed apprenticeship, including the achievement of competence-based and professional qualifications, opens the door to a number of opportunities for progression in both work and further learning.

Career advancement

Successful apprentices may progress within the workplace to either technical specialist roles or supervisory/managerial roles.

Further study

Options for those wishing to pursue further professional learning and development include:

Technical Apprenticeships

- Technical Apprenticeship in Engineering and Digital Manufacturing

Graduate Apprenticeships

There are opportunities to progress to degree level study at SCQF Level 9 in Engineering or in business related subjects.

- Graduate Apprenticeship in Engineering Design and Manufacture
- Graduate Apprenticeship in Instrumentation Measurement and Control
- Graduate Apprenticeship in Civil Engineering

Professional Registration

This apprenticeship may support professional recognition as it includes learning and skills outcomes common to a number of the introductory professional qualifications relevant to Engineering Technical Support

The apprentice, employer and learning provider will determine the most appropriate professional pathway in light of the apprentice's specific work role and the learning provider will guide each successful apprentice on the professional registration process they should follow.

Engineering Councils: List of Institutes here

Engineering Technician: Professional Standards here

AMENDMENTS

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Version Number	Date	Description