

Higher Apprenticeship - Electrical/Electronic Technical Support Engineering Apprenticeship Standard

Designation of Occupations

“Electrical/Electronic Technical Support Engineer” (Level 6)

Duration of Apprenticeship: Typically the duration of this apprenticeship is 5 to 6 years. This duration may be reduced for a candidate with previous relevant experience and/or someone already part qualified. Alternatively this may also be a progression route from a relevant Advanced Apprenticeship.

Suggested Entry Requirement: Individual employers will set the selection criteria for their Apprenticeships. In order to optimise success candidates will typically have 5 GCSE's at Grade C or above, including Mathematics, English and a Science, Technology or Engineering related subject, as well as A Levels at grade C or above in both a Mathematical based subject and a Science, Technology, Engineering or additional Mathematics related subject, or 90+ credits in an Engineering BTEC at level 3.

Role Specific Occupational Requirements: Electronic/Electronic Technical Support Engineers primarily support manufacturing in both assembly and in product design and development. They support the activities involved in bringing the concept to life and resolving issues within manufacturing. Typically they work closely with other engineers, suppliers and managers covering a broad range of support activity.

Vocational Skills: During the Foundation stage, the apprentice must develop a solid grasp of the core engineering skills. These skills will not only prepare the apprentice for the workplace in demonstrating that they have the required manual dexterity to do their core role but these competencies are transferable and can be built upon over time. The skills required are:

- How to comply with statutory requirements and stringent organisational safety requirements
- Producing components using hand fitting techniques
- Producing Electrical or Electronic Drawings using a Computer Aided Design (CAD) system
- Preparing and using lathes, milling and other general or specialist machines and High Tech equipment
- Wiring and testing electrical equipment, assembling and testing electronic circuits
- Using computer software packages to assist with engineering activities
- Producing engineering project plans
- Maintaining and improving electrical equipment/systems

During the development stage they would hone their professional engineering skills, along with, experimental / new product development, component investigation regarding costing, supplier support and design, development & test engineering. With all of these skills, they will be using a well-planned logical and systematic approach.

On successful completion of the above, the apprentice will then progress to develop their skills in:

- Project management in undertaking engineering activities
- Producing and working to engineering specifications & briefs, presenting and technical problem solving
- Scheduling and managing engineering activities
- Electrical/electronic product manufacturing and testing
- Demonstrating technical and commercial management in planning and managing tasks & resources

Academic Knowledge: The apprentice will initially complete a Foundation Degree which would provide the foundation stage of the knowledge elements in the competence qualification. It will support the fundamental scientific and mathematical principles that equip apprentices with the understanding required to operate effectively and efficiently at high level within this sector. As a core the engineer needs to cover around 960 academic Guided Learning Hours, in order to have a solid grasp of;

- Mathematics and science for engineers
- Materials and manufacture
- 3D Computer Aided Design and Computer Aided Engineering
- How to undertake and apply business-led projects
- Understanding actuators and sensors
- Electrical & electronic principles and electronic devices and applications
- Product improvement and engineering project management
- Digital electronics & microprocessors

For the Development Phase the apprentice will build on their foundation knowledge by completing a BSc (Hons) or BEng (Hons) in Engineering. Here they will expand their understanding to a higher level and work through specialised modules for this role.

Occupational Behaviours: Modern high value engineering organisations require their apprentices to have a set of occupational behaviours that will ensure success both in their current and future roles and in meeting the overall company objectives. These required behaviours include:

Safety mindset: This occupation sits within an industry with a high level of safety critical activities. There has to be strict compliance and a disciplined and responsible approach to manage, mitigate and avoid risk.

Strong work ethic: Positive attitude, motivated by engineering; dependable, ethical, responsible and reliable.

Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly “think on feet” when working through them.

Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution identified which prevents further recurrence.

Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail / error checks throughout activities.

Personal responsibility and resilience: Motivated to succeed accountable and persistent to complete task.

Clear communicator: Use a variety of appropriate communication methods to give/receive information accurately, and in a timely and positive manner.

Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts/ helps others when required. In doing so applies these skills in a respectful professional manner.

Applies Lean Manufacturing Principles: Continuous improvement in driving effectiveness and efficiency

Adaptability: Able to adjust to different conditions, technologies, situations and environments.

Self-Motivation: A ‘self-starter’, who always wants to give their best, sets themselves challenging targets, can make their own decisions.

Willingness to learn: wants to drive their continuous professional development

Commitment: Able to commit to the beliefs, goals and standards of their own employer and to the wider industry and its professional standards.

Training and Development Summary: There will be two phases of training to ensure that apprentices meet this Apprenticeship standard, in line with specified employer requirements¹. The foundation phase will be intensive off the job training focused on developing the apprentice's core skills, knowledge and behaviour, allowing them to work effectively with supervision in a largely simulated working environment. This stage will require typically 1400 Vocational Guided Learning Hours, building up from basics to more complex engineering operations and practices. The tasks will be aligned to the job role to develop a range of tailored core engineering techniques so by the end of this phase the apprentice will be able to demonstrate, under independent test conditions, that they can deploy their skills and occupational behaviours. In addition the apprentice typically undertakes an HND or Foundation Degree.

The development phase will focus on applying the apprentice's on-job vocational competence supported by further guided learning, enabling them to eventually work effectively without the need for supervision. The competencies gained are sufficiently transferable by the end of this development phase for someone to adapt quickly to function effectively after minimal instruction on new equipment / environments or revised working practices whilst, completing an Engineering Degree. There will be an employer endorsement as part of the final assessment of this phase to ensure that the apprentice has demonstrated full competence against the knowledge, skills and behaviours in this standard. The employer will sign off that the apprentice is ‘job ready’ as a competent Professional Electrical/Electronic Technical Support Engineer.

Professional Recognition and Career Progression: This standard has been designed to meet the professional standards of the Engineering Council for initial registration as an Engineering Technician (Eng Tech) in partnership with the Institution of Mechanical Engineers. Further professional development and registration is subject to candidates successfully completing the appropriate learning, developing the appropriate competence, and undergoing professional review.

Governance & Review date: March 2016 by engineering employer led trailblazer collaboration.

¹ In order to articulate the specific level of skills, knowledge and behaviours required to be achieved and assessed to demonstrate full occupational competence, the employers on the trailblazer group have developed a more detailed Employer Occupational Brief (EOB). This brief will inform the awarding organisations of the required elements of knowledge, behaviours and vocational skills within this Apprenticeship Standard. It will also provide a clear basis for the development of the assessment of this Apprenticeship and will enable the sector to maintain world class levels of quality and ensure that the credibility and consistency of the Apprenticeship outcome is maintained.