

Apprenticeship Standard for:

Aerospace Manufacturing Electrical / Mechanical and Systems Fitter

The following Standard reflects employers' requirements for the skills, knowledge and behaviours expected from someone to be competent in the job role.

Entry Requirements

Individual employers will set the selection criteria for their Apprenticeships. In order to optimise success, candidates will typically have 4 GCSE's at Grade C or equivalent, including Mathematics, English and a Science. Employers who recruit candidates without English or Maths at Grade C or above must ensure that the candidate achieves this standard prior to the completion of the Apprenticeship.

Duration of Apprenticeship

Minimum of 36 months, average of 42 months - Timescales may reduce if an apprentice has prior relevant qualifications/experience.

Role Profile

Aerospace Manufacturing Electrical / Mechanical and Systems Fitters are predominantly involved in highly skilled, complex and specialist detailed work, assembling, installing and testing aircraft electrical / mechanical/electromechanical equipment and systems according to specific work instructions, using relevant hand tools, installation and testing methods and techniques. They must comply with statutory regulations and organisational safety requirements. They must be able to use and interpret engineering data and documentation such as engineering drawings and computer generated printouts. They will be expected to work both individually and as part of a manufacturing team. They will be expected to test and adjust the equipment/ systems they have installed ensuring individual components, assemblies and systems meet the required specification. The requirements are designed to offer stretch and progression. They will be able to work with minimum supervision, taking responsibility for the quality and accuracy of the work they undertake. They will be proactive in finding solutions to problems and identifying areas for improving the business.

Role Requirements (Knowledge & Skills)

1. Using mathematical techniques, algebraic expressions, formulae and calculation to understand the theory of flight, aerodynamics, electrical, fuel, hydraulic and pneumatic and flying control systems and aviation manufacturing processes
2. Understanding the structure, properties and characteristics of materials used in the construction of aerospace components, sub-assemblies and whole structures
3. Understanding the practical and theoretical requirements of aerospace electrical, electronic, mechanical, electromechanical and fluid power equipment and systems
4. Reading and interpreting engineering data: reading and interpreting engineering drawings, specifications and computer generated information
5. Business improvement techniques: designing and implementing new or revised manufacturing processes to be more efficient and cost effective
6. Assembling, disassembling and installing aerospace components, sub-assemblies and whole systems (new and in service) as required such as wiring looms, anti-icing systems, electrical connectors, avionic units and using specified methods and procedures
7. Setting up and using a range of measuring, testing, diagnostic tools, rigs and equipment, using approved methods and procedures
8. Installing lighting, power supplies, engine control and instrumentation systems
9. Carrying out testing and diagnostic activities on installed components, equipment and systems and making adjustment/rectification where applicable
10. Precision drilling and finishing of holes in aerospace assemblies
11. Complying with statutory, quality, organisational and health and safety regulations while carrying out manufacturing techniques
12. Applying correct locking and securing methods and techniques (mechanical fasteners, locking and electrical bonding techniques)
13. Sealing and jointing techniques: use of seals, gaskets, and jointing materials
14. Installing and connecting pipe-work systems and aerospace assemblies
15. Recording work completed in the correct format and location
16. Employer tailored skills as required

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Note: In order to articulate the specific level of skills, knowledge and behaviours required to be achieved and assessed to demonstrate full occupational competence in the foundation and development phase of the Apprenticeship. The employers on the Trailblazer group have developed a more detailed **Employer Occupational Brief (EOB)**. The brief will inform the awarding organisations of the required elements of both knowledge 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 Apprenticeship outcome is maintained.

Employee Behaviours

Modern manufacturing organisations require their apprentices to have a set of behaviours that will ensure success both in their role and in the overall company objectives. The required behaviours are:

1. Strong work ethic: motivated, proactive, committed
2. Dependability and responsibility: punctual, reliable
3. Positive attitude: constructive thinking, motivated to succeed
4. Team player: able to work and interact effectively within a team and committed to equality & diversity
5. Effective communication: spoken, listening, body language, presentation, written
6. Adaptability: able to adjust to change
7. Honesty and integrity: truthful, sincere and ethical
8. Self-motivation: self-starter, able to make appropriate decisions and lead their own professional development
9. Personal commitment: prepared to make a personal commitment to the industry

Learning & Training

The learning and training to ensure the Apprenticeship Standard is met will be in three phases:

- 1) The Foundation Phase** (A sustained period of off-the-job training at Level 2 covering three key aspects of training, basic engineering skills, relevant underpinning knowledge and behavioural development.) The basic engineering skills include core or 'mandatory' requirements, together with a range of tailored engineering skills units required to meet the specific needs of individual employers. Academic study will underpin skills development and will form the preparation for achievement of the main academic component. During this time apprentices will develop the appropriate behaviours to support their learning. This phase will culminate in a Gateway Review to ensure a strong foundation of basic skills has been developed.
- 2) The Development Phase** (Further Vocational and Academic Learning) will build on the basic skills and knowledge from the Foundation phase and focus on developing further skills capability
- 3) End point assessment and sign off**
There will be an assessment at the end of the development phase where the apprentice will need to demonstrate full competence against the knowledge, skills and behaviours in this Standard. On completion of the employer 'sign off' apprentices will be certified by a relevant, recognised, industry endorsed, third party.

Recognition

The Apprenticeship is designed to be recognised by the Institution of Engineering & Technology (IET), the Royal Aeronautical Society, the Society of Operations Engineers and the Institution of Mechanical Engineers at 'Engineering Technician' level.

Level and Review – This Apprenticeship standard is at Level 3 (equivalent to A Levels) and will be reviewed in March 2017 to ensure it remains relevant and continues to meet employers' requirements.