

L3 APPRENTICESHIP

METAL FABRICATOR (WELDER)

Overview

This occupation is found in the advanced manufacturing engineering and engineering construction sectors. The broad purpose of the occupation is to carry out metal fabrication work using things such as rolled steel joists, columns, channels, steel plate and metal sheet etc. Work includes manufacturing bridges, oil rigs, ships, petro-chemical installations, cranes, platforms, aircraft, automotive and machinery parts, sheet metal enclosures, equipment supports, and anything that can be fabricated out of metal. Fabricators can work alone or in teams, in factories or on operational sites. Fabricators use a large range of metals including steel, aluminium and titanium at a range of thicknesses from 0.5mm up to over 20mm. The size and weight of the fabrications can range from components that can easily be picked up by hand, to massive structures that require several cranes to manipulate. In their daily work, an employee in this occupation interacts with planners, supervisors, inspectors, designers, welders, pipefitters, fitters, machinists, riggers, steel erectors, stores personnel, painters and many others involved in manufacturing, production, maintenance and repair. An employee in this occupation will be responsible for the quality and accuracy of their own work whilst ensuring it conforms to a relevant specification such as an engineering drawing or an international standard. Fabricators are also responsible for the health, safety and environmental (HS&E) protection of themselves and others around them.

Entry requirements*

Grade 3 GCSE (D) or above in English and Maths

Who is the course for?

Multi-Positional Welders are fully competent in manual welding using at least one arc process in all welding positions. This course is suitable for candidates who want to advance their welding skills already developed / achieved at intermediate level. Multi-Positional Welders use high electrical energy to form an arc. Manual dexterity is essential in controlling the arc, which is used to melt metals, allowing them to fuse together to form a structurally sound weld. There is a high demand for Multi-Positional Welders in areas such as: power generation, oil and gas, marine, transport, nuclear, processing, and aerospace, pharmaceuticals, construction and many more. Multi-Positional Welders make items such as: pressure containment equipment, pressure pipework, offshore jackets, submarines, military vehicles and equipment and aero engine components. Multi-Positional Welders are able to work with a range of welding processes, with different metals, to the levels of quality and inspection required in safety critical applications. The finished welds are often subjected to rigorous inspection and testing. Multi-Positional Welders are therefore required to consistently perform to high standards in order to ensure that the finished products function correctly, contributing to the safety of all and the global quality of life. Skilled, qualified, professionally certified Multi-Positional Welders can work anywhere in the world and provide services in the harshest of environments. For these accomplished professionals, the monetary rewards can be significant. There is a highly complex range of welding skills: the different arc welding processes require different levels of manual dexterity, knowledge and skill to avoid making defective welds. There are a wide range of metallic materials that can be welded all with different properties and behaviours.

KEY INFORMATION

Typical Duration:
42 Months + 3 months EPA

Taught Days:
One day every week term time only

Delivery Location:
Truro

Funding value:
£27,000

(£1,350 employer contribution if required)

Programme content

Knowledge

- The importance of complying with statutory, quality, organisational and health and safety regulations.
- General engineering mathematical and scientific principles, methods, techniques, graphical expressions, symbols formulae and calculations.
- The structure, properties and characteristics of common materials.
- The typical problems that may arise within their normal work activities/environment.
- Approved diagnostic methods and techniques used to help solve engineering problems.
- The importance of only using current approved processes, procedures, documentation and the potential implications if they are not adhered to.
- The different roles and functions in the organisation and how they interact.
- Why it is important to continually review fabrication and general engineering processes and procedures.
- The correct methods of moving and handling materials.
- Processes for preparing materials to be marked out.
- The tools and techniques available for cutting, shaping, assembling and finishing materials.
- Allowances for cutting, notching, bending, rolling and forming materials.
- Describe Pattern development processes, tooling and equipment.
- Describe Cutting and forming techniques, tooling and equipment.
- Describe Assembly and finishing processes, tooling and equipment.
- Inspection techniques that can be applied to check shape and dimensional accuracy.
- Factors influencing selection of forming process.
- Principles, procedures and testing of different joining techniques (Mechanised or Manual).
- Equipment associated with Manual or Mechanised joining techniques including maintaining equipment in a reliable and safe condition.
- Consumables used in Manual or Mechanised joining.
- Effects of heating and cooling metals.
- Consumables used in Manual or Mechanised joining.
- Different types of Welds and joints.
- Effects of heating and cooling metals.

Skills

- Always work safely, comply with health & safety legislation, regulations and organisational requirements.
- Comply with environmental legislation, regulations and organisational requirements.
- Obtain, check and use the appropriate documentation (such as job instructions, drawings, quality control documentation).
- Carry out relevant planning and preparation activities before commencing work activity.
- Undertake the work activity using the correct processes, procedures and equipment.
- Carry out the required checks (such as quality, compliance or testing) using the correct procedures, processes and/or equipment.
- Deal promptly and effectively with problems within the limits of their responsibility using approved diagnostic methods and techniques and report those which cannot be resolved to the appropriate personnel.
- Complete any required documentation using the defined recording systems at the appropriate stages of the work activity.
- Restore the work area on completion of the activity and where applicable return any resources and consumables to the appropriate location.
Identify and follow correct Metal work instructions, specifications, drawing etc.
- Mark out using appropriate tools and techniques.
- Cut and form Metal for the production of fabricated products.
- Produce and assemble Metal products to required specification and quality requirements.



- Identify and follow correct joining instructions, specifications, drawing etc.
- Carry out the relevant preparation before starting the joining fabrication activity.
- Set up, check, adjust and use joining and related equipment.
- Weld joints in accordance with approved welding procedures and quality requirements.

Behaviour

- Personal responsibility and resilience – Comply with the health and safety guidance and procedures, be disciplined and have a responsible approach to risk, work diligently regardless of how much they are being supervised, accept responsibility for managing time and workload and stay motivated and committed when facing challenges..
- Work effectively in teams – Integrate with the team, support other people, consider implications of their own actions on other people and the business whilst working effectively to get the task completed.
- Effective communication and interpersonal skills – An open and honest communicator, communicates clearly using appropriate methods, listen well to others and have a positive and respectful attitude.
- Focus on quality and problem solving – Follow instructions and guidance, demonstrate attention to detail, follow a logical approach to problem solving and seek opportunities to improve quality, speed and efficiency.
- Continuous personal development – Reflect on skills, knowledge and behaviours and seek opportunities to develop, adapt to different situations, environments or technologies and have a positive attitude to feedback and advice.

Gateway

Once the apprentice has successfully completed appropriate on programme training and assessment, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPA organisation, the judgement on whether the apprentice is deemed occupationally competent and ready for the EPA will be made by their employer. The employer will take this decision based on the knowledge, skills and behaviours attained by the apprentice and taking into consideration the apprentices' work experience, the views from the training provider where applicable and the apprentice, to inform this decision.

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment.

End point assessment

EPA methods

- Practical observation
- Professional discussion

Contact information

For further information, please call our Business Relations Team on 01872 242711 or email apprenticeships@truro-penwith.ac.uk



* A guide to GCSE grading and Functional Skills

Department for Education

GCSE Grading	
New Grading Structure	Old Grading Structure
9	A*
8	A*
7	A
6	B
5	B
4 Standard Pass →	C
3	D
2	E
1	F
	G
U	U

Functional Skills are equivalent to GCSE's, the table below shows the comparison

Entry Level 1	GCSE below G or Level 1
Level 1	GCSE D-G or level 1-3
Level 2	GCSE A* - C or level 4-9