



EWF/IIW Welding Diploma

An internationally recognised qualification supported by the International Institute of Welding (IIW) and the European Federation for Welding, Joining and Cutting (EFW) for assessing the competence of tasks and responsibilities during welding coordination (BS EN ISO 14731).

BS EN ISO 14731:2006 Welding Coordination - Tasks and responsibilities, specifies that responsible welding coordination personnel shall be able to demonstrate adequate general and specific knowledge in welding and allied processes to perform these tasks. Such knowledge must be the result of **a combination of theory, training and experience.**

Personnel holding EWF/IIW Diploma are qualified to perform welding coordination activities as described in ISO 14731, whose compliance is required by BS EN ISO 3834 (Quality requirements for fusion welding of metallic materials).

In its Part 1 (Criteria for the selection of the appropriate level of quality requirements), BS EN ISO 3834 states that in order 'to ensure sound and effective manufacturing, management needs to understand and appreciate the sources of potential trouble and to implement appropriate procedures for their control' ⁽¹⁾. This standard identifies measures applicable in different circumstances, being two of the most representative **contractual situations and assessment of welding quality performance between customers, manufacturers, third parties** etc. In consequence, **the compliance of 14731 and 3834 are priorities in the success of any metallic welding-related business.**

EWF/IIW Welding Diploma - An outline

The EWF/IIW Welding Diploma consists of three different levels: **Specialist (IWS)**, **Technologist (IWT)** and **Engineer (IWE)**. Although the topics covered in each level are similar, the depth and breadth are increased as progress is made towards the engineering level. The goals of each level are in line with the responsibilities outlined in BS EN ISO 14731⁽¹⁾.

Specialist (IWS)

'Personnel with basic technical knowledge where the level of technical knowledge needs to be sufficient for the planning, executing, supervising and testing of the tasks and responsibilities within a limited technical field, involving only simple welded constructions'.

Technologist (IWT)

'Personnel with specific technical knowledge, where the level of technical knowledge needs to be sufficient for the planning, executing, supervising and testing of the tasks and responsibilities in welding fabrication within a selective or limited technical field'.

Engineer (IWE)

'Personnel with comprehensive technical knowledge, where full technical knowledge is required... for the planning, executing, supervising and testing of all tasks and responsibilities in welding fabrication'.

⁽¹⁾ These extracts from BS EN ISO 14731:2006 and BS EN ISO 3834 are included to illustrate a particular point. In order to understand fully the requirements of the standard, please consult the complete standard.

Reach your full career potential

Modules

Each level (Specialist, Technologist and Engineer) consists of **four modules**:

- Welding processes and equipment
- Materials and their behaviour during welding
- Construction and design
- Fabrication applications engineering

There are two supplementary modules only for the Specialist Level:

- Advanced welding processes and equipment
- Practical welding technology

FAA modules and examinations must be completed as the final module.

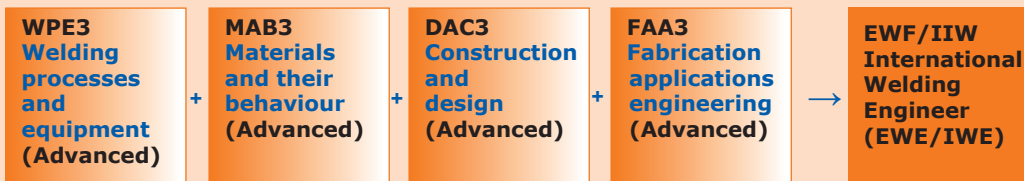
Specialist



Technologist



Engineer



In summary, via the standard route, IWS requires completion of six modules, IWT of ten and IWE of fourteen. Each module lasts one week and finishes with an exam.

* Exemption via application, depending on experience

Entry requirements

Specialist level

- Approved craft diploma in engineering subjects, for instance City and Guilds of London Institute **OR**
- Level 2/3 National or Scottish Vocational Qualifications or other nationally recognised vocations qualifications in engineering subjects

Technologist level

- Higher national Certificate (HNC) in an engineering discipline **OR**
- Professional engineer of incorporated (IEng) status granted by the UK Engineering Council under mature candidates rules, **OR**
- Level 4 National or Scottish Vocational Qualifications or other nationally recognised vocations qualifications in engineering subjects.

Engineer level

- University degree in an engineering discipline, **OR**
- Professional engineer of chartered engineer (CEng) status granted by the UK Engineering Council, **OR**
- Professional engineer of incorporated engineer (IEng) status, granted by the UK Engineering Council, including as a minimum an HNC or Higher National Diploma (HND) in an engineering discipline.

Course content

Module 1: Welding processes and equipment

- General introduction to welding technology
- Oxy-gas welding and related processes
- Electrotechnics - a review
- The arc
- Power sources for arc welding
- Introduction to gas shielded arc welding
- TIG welding
- MIG/MAG and flux cored arc welding
- MMA welding
- Submerged-arc welding
- Resistance welding
- Other welding processes (laser, electron beam, plasma)
- Cutting and other edge preparation processes
- Joining processes for plastics
- Joining processes for ceramics and and composited
- Consumables

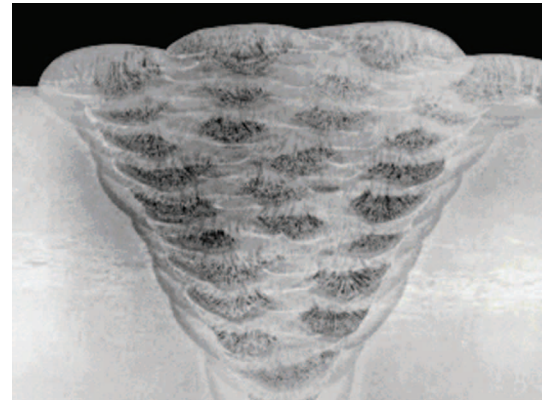
Important notes

- Candidates who in addition to academic qualifications can prove welding experience at the appropriate level may qualify for the alternative route. Under this option, candidates may be exempt from attempting one or more modules. Please contact us for further information.
- Candidates who do not have the academic qualifications required for this programme but can prove experience and knowledge to the relevant level are eligible to do the TWI Diploma in Welding Engineering, whose content and examinations are at the same technical level as the IIW. The TWI Diploma in Welding Engineering also satisfies the requirements of BS EN ISO 14731.



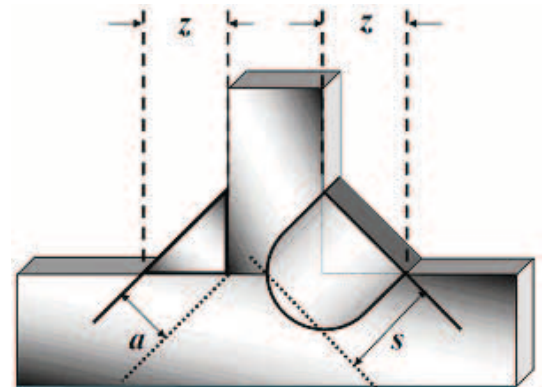
Module 2: Materials and their behaviour during welding

- Manufacture and designation of steels
- Testing materials
- Structure and properties of pure metals
- Alloys and phase diagrams
- Heat treatment
- Structure of the welded joint
- Steels: plain carbon, carbon-manganese steels, fine grained, low alloy, high alloy etc.
- Cracking phenomena in welded joints
- Introduction to corrosion
- High alloy creep resistant and heat resistant steels
- Cast irons and steels
- Non ferrous metals and alloys



Module 3: Construction and design

- Basic theory of structural systems
- Fundamentals of the strength of materials
- Welded joint design
- Basics of weld design
- Behaviour of welded structures under different types of loading
- Design of welded structures with predominantly static loading
- Behaviour of welded structures under dynamic loading
- Design of dynamically loaded welded structures
- Design of welded pressure equipment
- Design of aluminium alloys structures
- Reinforcing-steel welded joints



Module 4: Fabrication, applications engineering

- Introduction to quality assurance in welded fabrication
- Quality control during manufacture
- Residual stresses and distortion
- Plant facilities, welding jigs and fixtures
- Health and safety
- Measurement, control and recording in welding
- Non destructive testing
- Economics
- Repair welding
- Fitness-for-purpose
- Case studies
- Welding qualifications and procedures

