

Occupational Certificate: Welder

SAQA ID: 94100

NQF 4

Credits: 373

Cost: Contact Training Centre

This qualification is made up of the following compulsory Knowledge and Practical Skill Modules:

Knowledge Modules:

- Introduction to the welding trade, NQF Level 2, 2 Credits.
- Occupational Safety, Health and Environmental Protection, NQF Level 2, 4 Credits.
- Welding schematics, calculations, welds and welded joints, NQF Level 2, 6 Credits.
- Weld imperfections, NQF Level 2, 2 Credits.
- Cutting and gouging, NQF Level 2, 2 Credits.
- Welding consumable classification and handling, NQF Level 2, 4 Credits.
- Metals and weldability of metals, NQF Level 3, 8 Credits.
- Fusion welding, NQF Level 3, 6 Credits.
- Arc welding, NQF Level 3, 8 Credits.
- Gas welding and cutting, NQF Level 3, 4 Credits.
- Welding codes, standards and parameters, NQF Level 4, 6 Credits.
- Shrinkage, residual stress and distortion, NQF Level 4, 4 Credits.
- Manual Metal Arc, MMA welding process, NQF Level 4, 7 Credits.
- The Metal Inert Gas/Metal Active Gas/Flux Cored Arc, MIG/MAG/FCAW welding process, NQF Level 7, 7 Credits.
- Manual Metal Arc, MMA welding process, NQF Level 4, 7 Credits.
- Welding inspection and quality, NQF Level 4, 4 Credits.

Total number of Credits for the Knowledge Modules: 81.

Practical Skills Modules:

- Fabricate simple components or work pieces, NQF Level 2, 4 Credits.
- Cut, gouge and gas weld material manually, NQF Level 2, 12 Credits.
- Perform fillet welds using the Shielded Metal Arc Welding process, NQF Level 3, 12 Credits.
- Perform fillet welds using the Gas Metal Arc Welding process, NQF Level 3, 12 Credits.
- Perform fillet welds using the Gas Tungsten Arc Welding process, NQF Level 3, 16 Credits.
- Perform plate butt welds using the Shielded Metal Arc Welding process, NQF Level 4, 16 Credits.
- Perform plate butt welds using the Gas Metal Arc Welding process, NQF Level 4, 16 Credits.
- Perform plate butt welds using the Gas Tungsten Arc Welding process, NQF Level 4, 16 Credits.
- Perform pipe welds using the Shielded Metal Arc Welding process, NQF Level 4, 16 Credits.
- Perform pipe welds using the Gas Metal Arc Welding process, NQF Level 4, 16 Credits.
- Perform pipe welds using the Gas Tungsten Arc Welding process, NQF Level 4, 20 Credits.

Total number of credits for the Practical Skills Modules: 140.

This qualification also requires the following compulsory Work Experience Modules:

- Cut and gouge a range of materials in the workplace, NQF Level 2, 8 Credits.
- Produce a range of fillet welds using various welding processes in a workplace, NQF Level 4, 40 Credits.
- Care for, control and handle consumables and materials in a workshop, NQF Level 2, 4 Credits.
- Produce a range of plate welds using various welding processes in a workplace, NQF Level 4, 40 Credits.
- Team work, communication and reporting in the workplace, NQF Level 3, 8 Credits.
- Produce a range of pipe welds using various welding processes in a workplace, NQF Level 4, 52 Credits.

Total credits for the Work Experience Modules: 152.

EXIT LEVEL OUTCOMES

1. The ability to cut, gouge and gas weld ferrous materials.
2. The ability to weld ferrous materials including stainless steel using Shielded Metal Arc Welding.
3. The ability to weld ferrous and non-ferrous materials using Gas Metal Arc Welding processes.
4. The ability to weld ferrous and non-ferrous materials using the Gas Tungsten Arc Welding process.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria Exit Level Outcome 1:

Tools and equipment are selected, used and cared for to accepted standards.

Safe work procedures, precautions and Personal Protective Equipment required for each process can be described and is adhered to.

Cutting techniques, equipment setup and nozzle selection criteria and consequences if not adhered to can be explained for specific applications.

Gouging equipment setup and settings/parameters and consequences if not adhered to can be explained for specific applications.

Gas welding techniques, equipment setup and nozzle selection criteria and consequences if not adhered to can be explained for specific applications.

Cut and gouge profiles meets accepted quality standards.

Gas welded joints meet excepted quality standards.

Safe storage and handling practices of gases and consequences if not adhered to can be explained and is adhered to.

Associated Assessment Criteria Exit Level Outcome 2:

Schematic illustrations of Shielded Metal Arc Welding equipment can be labelled and the functions of selected components explained.

Diagrams of welds are labelled using the correct welding terminology.

Answers on welding of joints, demonstrates understanding of welding codes, the critical monitoring points, equipment settings, quality standards, and safety procedures.

Answers on welding of materials demonstrate understanding of characteristics of materials.

Shielded Metal Arc Welding processes can be explained in terms applications, and steps required to perform a quality weld and probable causes of defects.

Welding symbols can be recognised and correlated to the type of joint.

Welding consumables classification and applications can be explained.

Safe work procedures, precautions and Personal Protective Equipment required for Shielded Metal Arc Welding can be described.

Shielded Metal Arc welded fillet, plate and pipe joints meets prescribed welding codes or standards.

Associated Assessment Criteria Exit Level Outcome 3:

Schematic illustrations of Gas Metal Arc Welding equipment can be labelled and the functions of selected components explained.

Diagrams of welds are labelled using the correct welding terminology.

Answers on welding of joints, demonstrates understanding of welding codes, the critical monitoring points, equipment settings, quality standards, and safety procedures.

Answers on welding of materials demonstrate understanding of characteristics of materials.

Gas Metal Arc Welding processes can be explained in terms applications, and steps required to perform a quality weld and probable causes of defects

Welding symbols can be recognised and correlated to the type of joint.

Welding consumables classification and applications can be explained.

Safe work procedures, precautions and Personal Protective Equipment required for Gas Metal Arc Welding can be described.

Gas Metal Arc welded fillet, plate and pipe joints meets prescribed welding codes or standards.

Associated Assessment Criteria Exit Level Outcome 4:

Schematic illustrations of Gas Tungsten Arc Welding equipment can be labelled and the functions of selected components explained.

Diagrams of welds are labelled using the correct welding terminology.

Answers on welding of joints, demonstrates understanding of welding codes, the critical monitoring points, equipment settings, quality standards, and safety procedures.

Answers on welding of materials demonstrate understanding of characteristics of materials.

Gas Tungsten Arc Welding processes can be explained in terms applications, and steps required to perform a quality weld and probable causes of defects.

Welding symbols can be recognised and correlated to the type of joint.

Welding consumables classification and applications can be explained.

Safe work procedures, precautions and Personal Protective Equipment required for Gas Tungsten Arc Welding can be described.

Gas Metal Tungsten Arc welded fillet, plate and pipe joints meets prescribed welding codes or standards.

Integrated Summative Assessment:

The external summative assessment will be a trade test conducted in terms of Section 26 D of the Skills Development Act through an evaluation of written and practical tasks covering critical aspects of the trade and conducted in a simulated environment at an assessment centre accredited by QCTO by an assessor registered by National Artisan Moderation Body. The assessment will take place over a minimum of 2 days.

INTERNATIONAL COMPARABILITY

This qualification is based on the Minimum Requirements for the Education, Training, Examination and Qualification of Welding Personnel published by the International Institute of Welding (IIW). In 1999, the IIW launched an international programme for standardisation of the qualification of personnel involved in welding operations. A detailed guide on training and developed of persons involved in welding operations was produced as the accepted international standard, known as the 'Bratislava Agreement. Some 42 countries use these standards for the qualification of welders across the world.

Fillet Welder.

Plate Welder.

Pipe Welder.

Even though related qualifications are not currently registered on the NLRD, progression to higher level welding trade specific employment opportunities is possible for the qualified welder in areas such as:

International Welding Practitioners.

International Welding Specialists.

Welding Inspector: Level 1.

Welding Inspector: Level 2.

The curriculum title and code is: Welder, 651202000.