



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

OCCUPATIONAL STANDARDS

Welding

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TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>GEN001 (Internal code)</i>	
Unit Standard Title: Apply workplace health, safety, environmental and emergency practices	
KNQF Level: 1	Credits: 6

Unit Standard Description

This unit standard has been developed to assist with the advancement of people who wish to gain paid employment or enter into self-employment in a variety of contexts. It specifies the competencies required to: Apply workplace health and safety practices; Perform basic fire-fighting techniques; Perform first aid practices; Adhere to site emergency plans; and Apply environmental integrity.

Unit Standard Title		Apply occupational health, safety, environmental and emergency practices
Unit Scope	<p>This unit standard requires the identification, selection and use of a range of personal protective equipment, classification of classes of fire, identification, selection and use of fire fighting equipment, fire-reporting procedures, determination of injuries and medical emergencies, contexts of injuries, incident reporting procedures, and interpretation of information on site emergency plans.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements.</p>	
Element 1		Apply workplace health and safety practices
Range	<p>Personal Protective Equipment (PPE) may include but is not limited to safety boots; hard hat; safety gloves; safety glasses; high visibility vest; hearing protection; respiratory protection; and fall protection, where applicable.</p>	
Performance Criteria		
<p>1.1 Factors affecting health and safety in the workplace are identified</p> <p>1.2 General work site and employer safety rules are applied</p> <p>1.3 Personal protective equipment (PPE) is identified, selected and used</p>		
Element 2		Perform basic fire-fighting techniques
Range	<p>Range of classes of fire includes, but is not limited to A, B, C, D and E.</p> <p>Range of equipment includes, but is not limited to fire extinguishers, fire hoses and hose reels.</p> <p>Report information includes location and time of fire, people involved, accident details, safety precautions that were/were not in place, machinery or substances involved, responses of emergency services.</p>	
Performance Criteria		
<p>2.1 The type of fire encountered is classified</p> <p>2.2 Fire-fighting equipment is identified and selected according to class of fire</p> <p>2.3 The use of different fire-fighting equipment is demonstrated</p> <p>2.4 Fire-fighting report is completed</p>		

Element 3		Perform first aid practices
Range	<p>Injuries and medical emergencies include stopped heart and breathing (CPR), stopping bleeding, splinting and binding fractures, covering and calming, and dealing with epileptic fits, hyper ventilation, hypo/hyperthermia, chemical and fire burns, respiratory problems or suffocation, electrical and any other shock.</p> <p>Contexts of injuries include inaccessible places, places of extreme temperature, high risk areas.</p> <p>Report information includes location and time of injury/medical emergency, people involved, accident details, safety precautions that were/were not in place, machinery or substances involved, responses of emergency services.</p>	
Performance Criteria		
<p>3.1 Nature and context of the injury and/or medical emergency are determined</p> <p>3.2 First aid is applied</p> <p>3.3 Injured and/or ill person is handed over to medical personnel</p> <p>3.4 Incident and/or accident report is completed</p>		
Element 4		Adhere to site emergency plans
Range	Information may include, but is not limited to evacuation routes; procedures; and contact protocol.	
Performance Criteria		
<p>4.1 Information on site emergency plans are interpreted</p> <p>4.2 Instructions are followed and/or communicated</p> <p>4.3 Risks are assessed and course of action determined</p> <p>4.4 Emergency equipment and supplies are operated</p>		
Element 5		Apply environmental integrity
Range	N/A	
Performance Criteria		
<p>5.1 General environmental impacts are described</p> <p>5.2 Spill prevention, control and countermeasure (SPCC) techniques are applied</p> <p>5.3 Work site techniques to minimise environmental damage are applied</p> <p>5.4 Housekeeping procedures are applied in accordance with environmental control and worksite requirements</p>		

Underpinning Knowledge

The individual needs to demonstrate knowledge of:

- Company policies and procedures, including site emergency plans
- Manufacturers' specifications
- Legislative requirements
- Risks and consequences of HIV and AIDS, STDs and STIs to self and others
- Personal Protective Clothing and Equipment
- Causes and classes of fire
- Range of fire fighting equipment
- Basic first aid procedures and techniques
- Gender parity issues, non-discrimination of women including raping
- Environmental awareness, protection and enhancement

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>GEN002 (Internal code)</i>	
Unit Standard Title: Apply workplace essential skills	
KNQF Level: 1	Credits: 6

Unit Standard Description

This unit standard has been developed to assist in the advancement of people who wish to gain paid employment or enter into self-employment in a variety of contexts. It specifies the competencies required to: Follow principles of work ethics; Resolve conflict with others; Demonstrate effective speaking and listening skills; Read and interpret work document; Interact with team members; and Perform individual role in a team.

Unit Standard Title		Apply workplace essential skills
Unit Scope/Range	<p>This unit standard requires the demonstration of knowledge and application of common work ethic procedures, identification of different problems as part of conflict resolution at the work site, demonstration of the application of different languages and other means of communication, interpretation of different work documents, and identification of different team members.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements, contractual agreement and/or manufacturers' specifications.</p>	
Element 1		Follow principles of work ethics
Range	Work ethics may include, but are not limited to honesty; selflessness; consistency; moral; courage and respect.	
Performance Criteria		
<p>1.1 Integrity work ethics and expectations are identified</p> <p>1.2 Open mind and flexibility is kept at the time</p> <p>1.3 Conflicts are avoided whenever necessary</p> <p>1.4 Company policies and procedures are operated as required</p> <p>1.5 Self-assessment from time to time is carried out</p>		
Element 2		Resolve conflict with others
Range	Problems may include, but are not limited to interpersonal problems; organisational problems; group problems; and inter organizational problems.	
Performance Criteria		
<p>2.1 Problem at the work site is identified and analysed</p> <p>2.2 Company policies and procedures for solving the problem are applied</p> <p>2.3 Problem and disagreement resolution are justified with applicable legislation</p> <p>2.4 Conflict resolution techniques are formulated</p> <p>2.5 Effectiveness of problem or conflict resolution is evaluated</p>		

Element 3		Demonstrate effective speaking and listening skills
Range	Language of communication may include, but is not limited to English, Kiswahili and sign language.	
Performance Criteria		
<p>3.1 Correct oral message to be communicated is identified</p> <p>3.2 Clarity of the oral message to be communicated is determined</p> <p>3.3 Appropriate means of oral communication is selected</p> <p>3.4 Clear and accurate oral message is conveyed</p> <p>3.5 Feedback on the message conveyed is obtained and interpreted</p> <p>3.6 Corrective message communication measures are applied</p> <p>3.7 Prepared documentation to keep record of communication is used</p>		
Element 4		Read and interpret work document
Range	Work documents may include, but are not limited to work timesheets; attendance registers; job cards site maps; plans; inspection licenses; authority approvals documents, equipment inspection check sheets, and safe systems of work documents.	
Performance Criteria		
<p>4.1 Required work document are gathered and interpreted</p> <p>4.2 Work document details are verified against actual work</p> <p>4.3 Work document to correspond to actual work are reviewed</p>		
Element 5		Interact with team members
Range	<ul style="list-style-type: none"> Team members may include, but are not limited to core team members and support team members. 	
Performance Criteria		
<p>5.1 Correct team members are identified according to task requirements</p> <p>5.2 Capabilities of each team member are determined according to task requirements</p> <p>5.3 Acceptable, non-offensive language and gestures are used</p> <p>5.4 Relationships between members are maintained</p> <p>5.5 Suitable corrective measures for deviating members are employed</p> <p>5.6 Cross cultural diversities are accommodated</p>		

Element 6	Perform individual role in a team
Range	N/A
Performance Criteria	
6.1 Individual roles in a team are identified and described	
6.2 Assigned roles to the individual are conveyed and monitored	
Underpinning Knowledge	
The individual needs to demonstrate knowledge of: <ul style="list-style-type: none"> • Concept of a team and team work • Multi cultural diversity • Team goals and motivation • Problem/conflict solving techniques 	
Generic Skills	
The individual needs to demonstrate ability related to: <ul style="list-style-type: none"> • Communication • Team Work • Problem solving • Planning and Organising • Self-management • Technology 	



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>GEN003 (Internal code)</i>	
Unit Standard Title: Plan and organise work activities	
KNQF Level: 1	Credits: 6

Unit Standard Description

This unit standard has been developed to assist with the advancement of people who wish to gain paid employment or enter into self-employment in a variety of contexts. It specifies the competencies required to: Apply time management techniques; Apply quality improvement principles; and Apply productivity improvement measures.

Unit Standard Title		Plan and organise work activities
Unit Scope	This unit standard requires the application and implementation of work-scheduling rules and productivity measures.	
Element 1		Apply time management techniques
Range	Work-scheduling rules may include, but are not limited to daily and weekly working hours; break start and finish hours; and overtime.	
Performance Criteria		
1.1 Prepared activity time plan is identified 1.2 Activity goals and action plan are set 1.3 Time allocated for each activity is monitored and reviewed 1.4 Activity management techniques are applied 1.5 Activity intervention strategies are applied when required		
Element 2		Apply quality improvement principles
Range	N/A	
Performance Criteria		
2.1 Principles of quality control are identified 2.2 Suitable quality control principles are selected 2.3 Relevant quality management principles are applied 2.4 Appropriate control strategies are determined 2.5 Required quality improvement principles are applied 2.6 Effects of change of quality control strategies are assessed		
Element 3		Apply productivity improvement measures
Range	Productivity measures may include, but are not limited to productivity data, cycles and targets.	

Performance Criteria

- 3.1 Productivity cycle is identified and described
- 3.2 Challenges in production activities are determined
- 3.3 Possible solutions are formulated
- 3.4 Productivity measures are implemented
- 3.5 Productivity improvement measure is appraised

Underpinning Knowledge

The individual needs to demonstrate knowledge of:

- Quality requirements
- Time management concepts
- Team goals and motivation

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>WEL001 (Internal code)</i>	
Unit Standard Title: Apply fundamental skills of welding works	
KNQF Level: 3	Credits: 16

Unit Standard Description

This unit standard is intended for those who carry out welding operations. It specifies the competencies required to: Apply hand tools used in welding operations; Apply power tools and equipment used in welding operations; Read and interpret drawings and specifications; Perform basic measurements and calculations; and Perform advanced measurements and calculations.

Unit Standard Title		Apply fundamental skills of welding works
Unit Scope	This unit standard requires the safe use of all hand and power tools for welding works, instruments and tools to measure and compile drawings, and the reading and interpretation of existing welding fabrication drawings.	
Element 1		Apply hand tools used in welding operations
Range	N/A	
Performance Criteria		
1.1 Hand tools used in welding practice are identified 1.2 Hand tools are used as per manufacturer's specifications 1.3 Hand tools are stored and cared for as per procedures and best practices		
Element 2		Apply power tools and equipment used in welding operations
Range	N/A	
Performance Criteria		
2.1 Power tools and equipment used in welding practice are identified 2.2 Power tools are inspected for damage, completeness and wear 2.3 Power tools and equipment are used as per manufacturer's specifications 2.4 Power tools and equipment are stored and cared for as per procedures and best practices		
Element 3		Perform basic measurements and calculations
Range	N/A	
Performance Criteria		
3.1 SI units were explained 3.2 Conversion between metric and imperial measurements was performed 3.3 Accurate linear measurements were done 3.4 Basic area calculations were performed		

Element 4	Read and interpret drawings and specifications
Range	N/A
Performance Criteria	
4.1 Scales, symbols and types of drawings are described	
4.2 Material requirements and specifications are extracted from the drawings	
4.3 Drawings are cared for and stored properly	
Element 5	Perform advanced measurements
Range	N/A
Performance Criteria	
5.1 Measurements are conducted using a Vernier caliper	
5.2 Measurements are conducted using a gauge/gap/fillet/angle measurement	
Underpinning Knowledge	
The individual needs to demonstrate knowledge of: <ul style="list-style-type: none"> • Basic mathematics • How to use a calculator 	
Generic Skills	
The individual needs to demonstrate ability related to: <ul style="list-style-type: none"> • Communication • Team Work • Problem solving • Planning and Organising • Self-management • Technology 	



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>WEL002 (Internal code)</i>	
Unit Standard Title: Perform manual arc (stick) welding in all positions with various metal work pieces	
KNQF Level: 3	Credits: 60

Unit Standard Description

This unit standard is intended for those who carry out welding operations. It specifies the competencies required to: Apply safety to a workplace; Apply housekeeping principles to welding work area; Prepare tools, equipment, consumables and work pieces for manual arc (stick) welding processes; Weld work pieces in all positions in accordance with national and international specifications and procedures; and Inspect finished product quality against national and international specifications and procedures.

Unit Standard Title		Perform manual arc (stick) welding in all positions with various metal work pieces
Unit Scope	<p>This unit standard requires the demonstration and application of welding safety and housekeeping, preparation of a range of tools and different metal work pieces prior to the manual arc (stick) welding process, the application of a range of different welding positions, and the final quality inspection of the manual arc (stick) weld.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements, contractual agreement and/or manufacturers' specifications.</p>	
Element 1	Apply safety to a workplace	
Range	N/A	
Performance Criteria		
<p>1.1 Correct Personal Protective Equipment (PPE) for the job is identified</p> <p>1.2 PPE is worn correctly</p> <p>1.3 All required permits and approvals are obtained prior to starting work</p> <p>1.4 Any incidents, hazards and risks are reported</p>		
Element 2	Apply housekeeping principles to welding work area	
Range	N/A	
Performance Criteria		
<p>2.1 Workplace is cleaned and prepared before and after welding is completed</p> <p>2.2 Tools, equipment and unused materials and consumables are returned to safe area</p> <p>2.3 Completed work piece is stored correctly</p>		
Element 3	Prepare tools, equipment, consumables and work pieces for manual arc (stick) welding processes	
Range	<p>Work pieces include the following metals:</p> <p>Mild Steel, Cast Iron, Aluminium, Alloy Steels, Stainless Steel and Carbon Steel.</p>	

Performance Criteria	
<p>3.1 Drawings and specifications are obtained and interpreted</p> <p>3.2 Consumables, materials, tools and equipment for job are obtained</p> <p>3.3 Work pieces are measured, marked, cut and prepared according to specifications</p> <p>3.4 Equipment is set up according to manufacturer's specification</p>	
Element 4	Weld work pieces in all positions in accordance with national and international specifications and procedures
Range	Welding positions include F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G.
Performance Criteria	
<p>4.1 Welding is conducted according to drawings and specifications</p> <p>4.2 All relevant safety aspects are adhered to during the welding process</p> <p>4.3 Accidents and incidents are reported according to workplace procedure</p>	
Element 5	Inspect finished product quality against national and international specifications and procedures
Range	N/A
Performance Criteria	
<p>5.1 The weld joint is completed (full coverage)</p> <p>5.2 Weld appearance, quality and integrity is found to be in accordance with the specifications</p> <p>5.3 Weld is dressed as required by the specification</p> <p>5.4 Any defects/deviations are reported according to workplace procedure following inspection</p>	

Underpinning Knowledge

The individual needs to demonstrate knowledge of:

- Different types of PPE
- Different weld positions F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G
- Types of tools, equipment and consumables
- Different types of metals in order to be able to select the correct metal
- Types of welding rods and applications
- Correct amperage for the type and thickness of metal to be welded and electrode selected
- Ability to read and interpret welding drawings and specifications
- Weld finishes and methods
- 5S principles and their application in housekeeping
- Safety rules and regulations applicable to the job

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>WEL003 (Internal code)</i>	
Unit Standard Title: Perform TIG welding in all positions with various metal work pieces	
KNQF Level: 3	Credits: 50

Unit Standard Description

This unit standard is intended for those who carry out welding operations. It specifies the competencies required to: Apply safety to a workplace; Apply housekeeping principles to welding work area; Prepare tools, equipment, consumables and work pieces for the TIG welding processes; Weld work pieces in all positions in accordance with national and international specifications and procedures; and Inspect finished product quality against national and international specifications and procedures.

Unit Standard Title		Perform TIG welding in all positions with various metal work pieces
Unit Scope	<p>This unit standard requires the demonstration and application of welding safety and housekeeping, preparation of a range of tools and different metal work pieces prior to the TIG welding process, the application of a range of different welding positions, and the final quality inspection of TIG weld.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements, contractual agreement and/or manufacturers' specifications.</p>	
Element 1	Apply safety to a workplace	
Range	N/A	
Performance Criteria		
<p>1.1 Correct Personal Protective Equipment (PPE) for the job is identified</p> <p>1.2 PPE is worn correctly</p> <p>1.3 All required permits and approvals are obtained prior to starting work</p> <p>1.4 Any incidents, hazards and risks are reported</p>		
Element 2	Apply housekeeping principles to welding work area	
Range	N/A	
Performance Criteria		
<p>2.1 Workplace is cleaned and prepared before and after welding is completed</p> <p>2.2 Tools, equipment and unused materials and consumables are returned to safe area</p> <p>2.3 Completed work piece is stored correctly</p>		

Element 3	Prepare tools, equipment, consumables and work pieces for TIG welding processes
Range	Work pieces include the following metals: Mild Steel, Cast Iron, Aluminium, Alloy Steels, Stainless Steel and Carbon Steel.
Performance Criteria	
3.1 Drawings and specifications are obtained and interpreted 3.2 Consumables, materials, tools and equipment for job are obtained 3.3 Work pieces are measured, marked, cut and prepared according to specifications 3.4 Equipment is set up according to manufacturer's specification	
Element 4	Weld work pieces in all positions in accordance with national and international specifications and procedures
Range	Welding positions include F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G.
Performance Criteria	
4.1 Welding is conducted according to drawings and specifications 4.2 All relevant safety aspects are adhered to during the welding process 4.3 Accidents and incidents are reported according to workplace procedure	
Element 5	Inspect finished product quality against national and international specifications and procedures
Range	N/A
Performance Criteria	
5.1 The weld joint is completed (full coverage) 5.2 Weld appearance, quality and integrity is found to be in accordance with the specifications 5.3 Weld is dressed as required by the specification 5.4 Any defects/deviations are reported according to workplace procedure following inspection	

Underpinning Knowledge

The individual needs to demonstrate knowledge of:

- Different types of PPE
- Different weld positions F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G
- Types of tools, equipment and consumables
- Different types of metals in order to be able to select the correct metal
- Types of welding rods and applications
- Correct amperage for the type and thickness of metal to be welded and electrode selected
- Ability to read and interpret welding drawings and specifications
- Weld finishes and methods
- 5S principles and their application in housekeeping
- Safety rules and regulations applicable to the job

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>WEL004 (Internal code)</i>	
Unit Standard Title: Perform MIG welding in all positions with various metal work pieces	
KNQF Level: 3	Credits: 50

Unit Standard Description

This unit standard is intended for those who carry out welding operations. It specifies the competencies required to: Apply safety to a workplace; Apply housekeeping principles to welding work area; Prepare tools, equipment, consumables and work pieces for the MIG welding processes; Weld work pieces in all positions in accordance with national and international specifications and procedures; and Inspect finished product quality against national and international specifications and procedures.

Unit Standard Title		Perform MIG welding in all positions with various metal work pieces
Unit Scope	<p>This unit standard requires the demonstration and application of welding safety and housekeeping, preparation of a range of tools and different metal work pieces prior to the MIG welding process, the application of a range of different welding positions, and the final quality inspection of the MIG weld.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements, contractual agreement and/or manufacturers' specifications.</p>	
Element 1	Apply safety to a workplace	
Range	N/A	
Performance Criteria		
<p>1.1 Correct Personal Protective Equipment (PPE) for the job is identified</p> <p>1.2 PPE is worn correctly</p> <p>1.3 All required permits and approvals are obtained prior to starting work</p> <p>1.4 Any incidents, hazards and risks are reported</p>		
Element 2	Apply housekeeping principles to welding work area	
Range	N/A	
Performance Criteria		
<p>2.1 Workplace is cleaned and prepared before and after welding is completed</p> <p>2.2 Tools, equipment and unused materials and consumables are returned to safe area</p> <p>2.3 Completed work piece is stored correctly</p>		

Element 3	Prepare tools, equipment, consumables and work pieces for MIG welding processes
Range	Work pieces include the following metals: Mild Steel, Cast Iron, Aluminium, Alloy Steels, Stainless Steel and Carbon Steel
Performance Criteria	
3.1 Drawings and specifications are obtained and interpreted 3.2 Consumables, materials, tools and equipment for job are obtained 3.3 Work pieces are measured, marked, cut and prepared according to specifications 3.4 Equipment is set up according to manufacturer's specification	
Element 4	Weld work pieces in all positions in accordance with national and international specifications and procedures
Range	Welding positions include F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G
Performance Criteria	
4.1 Welding is conducted according to drawings and specifications 4.2 All relevant safety aspects are adhered to during the welding process 4.3 Accidents and incidents are reported according to workplace procedure	
Element 5	Inspect finished product quality against national and international specifications and procedures
Range	N/A
Performance Criteria	
5.1 The weld joint is completed (full coverage) 5.2 Weld appearance, quality and integrity is found to be in accordance with the specifications 5.3 Weld is dressed as required by the specification 5.4 Any defects/deviations are reported according to workplace procedure following inspection	

Underpinning Knowledge

The individual needs to demonstrate knowledge of:

- Different types of PPE
- Different weld positions F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G
- Types of tools, equipment and consumables
- Different types of metals in order to be able to select the correct metal
- Types of welding wire, gases and applications
- Correct amperage for the type and thickness of metal to be welded
- Ability to read and interpret welding drawings and specifications
- Weld finishes and methods
- 5S principles and their application in housekeeping
- Safety rules and regulations applicable to the job

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

NATIONAL OCCUPATIONAL STANDARD

Unit Standard Code: <i>WEL005 (Internal code)</i>	
Unit Standard Title: Perform gas welding in all positions with various metal work pieces	
KNQF Level: 3	Credits: 50

Unit Standard Description

This unit standard is intended for those who carry out welding operations. It specifies the competencies required to: Apply safety to a workplace; Apply housekeeping principles to welding work area; Prepare tools, equipment, consumables and work pieces for the gas welding processes; Weld work pieces in all positions in accordance with national and international specifications and procedures; and Inspect finished product quality against national and international specifications and procedures.

Unit Standard Title		Perform gas welding in all positions with various metal work pieces
Unit Scope	<p>This unit standard requires the demonstration and application of welding safety and housekeeping, preparation of a range of tools and different metal work pieces prior to the gas welding process, the application of a range of different welding positions, and the final quality inspection of gas weld.</p> <p>Performance of all elements must comply with all relevant statutory, health, safety, environment, and worksite requirements, contractual agreement and/or manufacturers' specifications.</p>	
Element 1	Apply safety to a workplace	
Range	N/A	
Performance Criteria		
<p>1.1 Correct Personal Protective Equipment (PPE) for the job is identified</p> <p>1.2 PPE is worn correctly</p> <p>1.3 All required permits and approvals are obtained prior to starting work</p> <p>1.4 Any incidents, hazards and risks are reported</p>		
Element 2	Apply housekeeping principles to welding work area	
Range	N/A	
Performance Criteria		
<p>2.1 Workplace is cleaned and prepared before and after welding is completed</p> <p>2.2 Tools, equipment and unused materials and consumables are returned to safe area</p> <p>2.3 Completed work piece is stored correctly</p>		
Element 3	Prepare tools, equipment, consumables and work pieces for gas welding processes	
Range	<p>Work pieces include the following metals:</p> <p>Mild Steel, Alloy Steels, and Carbon Steel</p>	
Performance Criteria		
<p>3.1 Drawings and specifications are obtained and interpreted</p> <p>3.2 Consumables, materials, tools and equipment for job are obtained</p> <p>3.3 Work pieces are measured, marked, cut and prepared according to specifications</p> <p>3.4 Equipment is set up according to manufacturer's specification</p>		

Element 4	Weld work pieces in all positions in accordance with national and international specifications and procedures
Range	Welding positions include F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G
Performance Criteria	
<p>4.1 Welding is conducted according to drawings and specifications</p> <p>4.2 All relevant safety aspects are adhered to during the welding process</p> <p>4.3 Accidents and incidents are reported according to workplace procedure</p>	
Element 5	Inspect finished product quality against national and international specifications and procedures
Range	N/A
Performance Criteria	
<p>5.1 The weld joint is completed (full coverage)</p> <p>5.2 Weld appearance, quality and integrity is found to be in accordance with the specifications</p> <p>5.3 Weld is dressed as required by the specification</p> <p>5.4 Any defects/deviations are reported according to workplace procedure following inspection</p>	
Underpinning Knowledge	
<p>The individual needs to demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Different types of PPE • Different weld positions F1, F2, F3, F4, 1G, 2G, 3G, 4G, 5G, 6G • Types of tools, equipment and consumables • Different types of metals in order to be able to select the correct metal • Types of welding rods and applications • Ability to read and interpret welding drawings and specifications • Weld finishes and methods • 5S principles and their application in housekeeping • Safety rules and regulations applicable to the job 	

Generic Skills

The individual needs to demonstrate ability related to:

- Communication
- Team Work
- Problem solving
- Planning and Organising
- Self-management
- Technology

