

---

# Curriculum

## Industrial Welder (Oil & Gas)

**SECTOR: HYDROCARBON**  
**SUB-SECTOR: CONSTRUCTION & SERVICES**  
**OCCUPATION: Welding**  
**REF ID: HYC/Q 9101, V1.0**  
**NSQF LEVEL: 4**



## TABLE OF CONTENTS

<b>1. Curriculum</b>	<b>01</b>
<b>2. Trainer Prerequisites</b>	<b>14</b>
<b>3. Annexure: Assessment Criteria</b>	<b>15</b>

# Industrial Welder (Oil & Gas)

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Industrial Welder (Oil & Gas)”, in the “Hydrocarbon” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>Industrial Welder (Oil &amp; Gas)</b>		
<b>Qualification Pack Name &amp; Reference ID. ID</b>	HYC/Q 9101		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	19-04-2017
<b>Pre-requisites to Training</b>	Class X		
<b>Training Outcomes</b>	<p>After completing this program, participants will be able to:</p> <ul style="list-style-type: none"><li>• <b>General work shop practice followed in the shop floor:</b> Apply principles of occupational health and safety in the work environment, perform engineering measurements, Cuts workpiece, using powered saws, hand shears, or chipping knife, lays out, positions, and secures parts and assemblies according to specifications, Make and Inspects grooves, angles, or gap allowances, using micrometer, caliper, and precision measuring instruments.</li><li>• <b>Welding using Manual Metal Arc welding/Shielded metal arc welding:</b> Safe and Secure Environment, Safety while Handling CNG (during an emergency)</li><li>• <b>Manually (semi-automatic) welding joints using the MIG/MAG</b> cleanliness around the workplace, follow good personal hygiene habits and practices, take precautionary health measures</li><li>• <b>Perform Tungsten Inert Gas (TIG) Welding also known as Gas Tungsten Arc Welding (GTAW) Welding:</b> engage with customers to understand their service quality requirements, fulfil customer requirements to achieve customer satisfaction, adhere to service and safety guidelines at all times</li><li>• <b>Work effectively in a team:</b> colleagues, superiors, members of own work group, people in other work groups within or outside the organization, communicate, face-to-face, by telephone, in writing</li><li>• <b>Use basic, health, safety and security procedures:</b> Health and Safety, Fire safety, Safety systems, Emergencies, rescue and first-aid procedures</li></ul>		

This course encompasses 6 out of 6 National Occupational Standards (NOS) of “Industrial Welder (Oil & Gas)” Qualification Pack issued by “Hydrocarbon Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Introduction</b></p> <p><b>Theory Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>• Introduction, Importance operations and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>• Participant hand book</li> <li>• Pen, Pencil, Note pad and other training aids</li> <li>• LCD Projector</li> <li>• Laptop and Speakers</li> </ul>
2	<p><b>General work shop practice followed in the shop floor</b></p> <p><b>Theory Duration</b> (hh:mm) 40:00</p> <p><b>Practical Duration</b> (hh:mm) 160:00</p> <p><b>Corresponding NOS Code</b> HYC/N 9101</p>	<ul style="list-style-type: none"> <li>• Consistently apply and promote health and safety legislation and best practice and work in a safe manner on a worksite</li> <li>• Health and safety legislation and best practice</li> <li>• The range and uses of trade related equipment’s</li> <li>• How to use and operate tools safely</li> <li>• Specific safety issues relating to work involving cutting tools</li> <li>• The importance of working logically and in a well-organized manner.</li> <li>• Operate trade machinery effectively, safely and in accordance with manufacturers’ instructions</li> <li>• Select and use appropriate machine tools safely and effectively</li> <li>• Basic mathematical manipulation and unit conversion</li> <li>• Geometrical principles, techniques and calculations</li> <li>• Understand basic mathematical calculation.</li> <li>• Select and apply basic Calculation of area and volume</li> <li>• use appropriate mathematical concepts and skills to solve problems in Fractions, Decimals, Percentage and ratio</li> <li>• Develop ability to perform basics of Algebra and understand Simple algebraic equations and problems</li> <li>• Acquire the techniques of solving simple Trigonometric problems</li> <li>• Ability to apply knowledge of Metals and non-metals</li> </ul>	<ul style="list-style-type: none"> <li>• Pictorial presentation</li> <li>• Shop floor with basic equipment</li> <li>• Sample SOP</li> <li>• Flip chart</li> <li>• Sample Job card</li> <li>• Class Room</li> <li>• White Board and Markers</li> <li>• LCD Projector</li> <li>• Laptop</li> <li>• Speakers</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Types and characteristics of materials used in the manufacturing industry</li> <li>• Ability to identify Ferrous and non-ferrous metals</li> <li>• Ability to integrate Steel - Properties and applications of the following</li> <li>• Carbon Steels and Alloy Steels (With Reference to welding)</li> <li>• Apply the basic principles of material selection to specific applications Stainless Steel</li> <li>• Highlight the property of different material and their workability.</li> <li>• Explain the differences in properties of different materials, including metals, alloys, ceramics, polymers and composites</li> <li>• Describe the basics of Heat treatment principles</li> <li>• Highlight Different Heat treatment operations, their purpose</li> <li>• Apply and explain the application of Stress relieving with reference to welding</li> <li>• Understanding written sentences and paragraphs in work related documents.</li> <li>• Primary electrical supply circuit terminology and its operation</li> <li>• Secondary electrical / welding circuit terminology and operation</li> <li>• Knowledge of the practical application of electricity and technology.</li> <li>• This includes applying principles, techniques, procedures like AC and DC current, Single phase circuit and Three phase circuit etc.</li> <li>• Perform routine maintenance on equipment and determining when and what kind of maintenance is needed. Will require you to manage systems and ensure they work smoothly.</li> <li>• Testing existing wiring for safety and quality control.</li> <li>• Earth connections</li> <li>• Circuit protective devices</li> <li>• Understanding of work shop safety and welding Safety</li> </ul>	
3	<p><b>Manual Metal Arc welding/Shielded metal arc welding</b></p> <p><b>Theory Duration (hh:mm)</b> 40:00</p>	<ul style="list-style-type: none"> <li>• work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines</li> <li>• adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations</li> <li>• check the condition of, welding leads, earthing arrangements and electrode holder</li> <li>• report any faults or potential hazards to appropriate authority</li> </ul>	<ul style="list-style-type: none"> <li>• Class Room</li> <li>• Participant hand book</li> <li>• White Board and Markers</li> <li>• LCD Projector</li> <li>• Laptop</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Practical</b>  <b>Duration</b>            (hh:mm)            160:00</p> <p><b>Corresponding</b>  <b>NOS Code</b>            HYC/N 9102</p>	<ul style="list-style-type: none"> <li>• follow fume extraction safety procedures</li> <li>• Use specific terminology used in the welding industry</li> <li>• The selection, use and techniques of the various welding process</li> <li>• The most Common Welding Processes</li> <li>• Knowledge of different Welding Terminology</li> <li>• Able to differentiate AC/DC Machines</li> <li>• Narrate and justify the advantages of DC machines</li> <li>• Know how the specification of DC machines are done</li> <li>• Ability to select the machine as per job specification</li> <li>• Practical Setup the machine for welding</li> <li>• What all Care and maintenance of machine</li> <li>• Arc welding accessories -Electrode holder, Earth lamp welding cables</li> <li>• The selection and use of safety equipment related to specific or dangerous tasks</li> <li>• Knowledge on components of the Essential equipment required for welding are:</li> <li>• Ability to interpretation of welding / engineering drawings and weld symbols welding procedure specifications and standard operating procedures as given below-welding process (ISO codes); parent metal</li> <li>• Correct alignment of process with material being used</li> <li>• How surface contamination can influence the finished weld characteristics</li> <li>• The correct machine settings to be aligned to:</li> <li>• Use the correct welding electrodes Types of electrodes Specification of electrodes AWS coding of electrodes Selection of electrodes</li> <li>• The characteristics and properties of filler materials</li> <li>• The methods of edge preparation to align with joint profile, strength, material and drawing specification</li> <li>• perform measurements for joint preparation and routine MMAW</li> <li>• prepare the materials and joint in readiness for welding, made rust free, cleaned – free from scaling, paint, oil/grease; made dry and free from moisture, edges to be welded prepared as per job requirement - such as flat, square or beveled</li> <li>• use manual metal-arc welding and related equipment to include alternating current (AC) equipment direct current (DC) equipment</li> <li>• report any faults or problem to appropriate authority</li> <li>• strike and maintain a stable arc</li> <li>• stop and properly re-start arcs to avoid welding defects (scratch start, tapping techniques)</li> </ul>	<ul style="list-style-type: none"> <li>• Speakers</li> <li>• 200 Amp Ac Welding Transformer with Cables.</li> <li>• Electrodes 6013 Grade DÍA 2.5 Mm And 3.15 Mm.</li> <li>• Ut Testing, Fracture Testing and Dp Testing Facility.</li> <li>• Gas Cutting with Pug Attachment</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• maintain constant puddle by using appropriate travel speed</li> <li>• maintain proper bead sequence with respect to groove/fillet configurations and positions</li> <li>• remove slag in an appropriate manner (e.g. wire brush, hammer, etc.)</li> <li>• produce welded joints to the specified quality, dimensions and profile</li> <li>• produce fillet and groove joints in 1F/1G, 2F/2G and 3F/3G welding positions as per the WPS specified using single or multi-run welds</li> <li>• deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve</li> <li>• produce joints on carbon and low alloy steel materials using various methods: drag, weave, whip</li> <li>• shut down and make safe the welding equipment on completion of the welding activities</li> <li>• measure and check that all dimensional and geometrical aspects of the weld are as per instructions</li> <li>• check that the welded joint conforms to the instructions given, by checking various quality parameters by visual inspection</li> <li>• identify various weld defects using visual inspection</li> <li>• Detect and report surface imperfections to appropriate authority</li> <li>• deal with defects in welding as per instructions given</li> </ul>	
4	<p><b>Manually (semi-automatic) welding joints using the MIG/MAG</b> (hh:mm) 40:00</p> <p><b>Practical Duration</b> (hh:mm) 160:00</p> <p><b>Corresponding NOS Code</b> HYC/N 9103</p>	<ul style="list-style-type: none"> <li>• work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines</li> <li>• adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations for MIG/MAG welding operations</li> <li>• check the condition of welding leads, gas connection arrangements, earthing arrangements and electrode holder</li> <li>• report any faults or potential hazards to appropriate authority</li> <li>• interpret weld procedure data sheets specifications, PQR and WPS</li> <li>• select welding machines such as inverters, rectifiers and generators, according to the task</li> <li>• select electrodes according to classification and specifications PC8. prepare the materials and joint in readiness for welding</li> </ul>	<ul style="list-style-type: none"> <li>• Trainer Guide</li> <li>• Class Room</li> <li>• White Board &amp; Markers</li> <li>• LCD Projector</li> <li>• Laptop and Speakers</li> <li>• Safety play cards</li> <li>• Safety regulation manual</li> <li>• MIG Welding machine with 0.8 mm and 1.2 mm wire spool.</li> <li>• Ut Testing,</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• check the condition of, and correctly connect, welding leads/cables, hoses, shielding gas supply and wire feed mechanisms</li> <li>• prepare the welding equipment for a range of given applications Welding equipment: rectifier</li> <li>• plan the welding activities before they start them effectively and efficiently for achieving specifications as per WPS</li> <li>• clean wire feeder and torch tip</li> <li>• connect torches and components</li> <li>• connect and adjust regulators and flow meters to cylinders</li> <li>• adjust wire feed rate and read and set current as required</li> <li>• set other welding parameters (e.g. voltage, slope of current versus voltage curve where required)</li> <li>• choose appropriate mode of metal transfer</li> <li>• set pre-purge with shielding gas as required</li> <li>• set and verify gas flow rates</li> <li>• prepare and support the joint, using the appropriate methods</li> <li>• tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding</li> <li>• use manual welding and related equipment, to carry out MIG/MAG welding processes</li> <li>• perform MIG/MAG welding operations using various welding techniques to meet welding procedure specification requirements</li> <li>• adjust wire stick-out as per requirement</li> <li>• use welding consumables appropriate to the material and application to DC current types</li> <li>• assist in preparation for non-destructive testing of the welds, for a range of tests Non-destructive tests (NDT): dye penetrant (DPT), fluorescent penetrant (FPT), magnetic particle (MPT)</li> <li>• prepare for destructive tests on weld specimens for fillet, butt and corner Destructive tests (DT): macro examination, nick break test, bend tests (such as face, root or side, as appropriate), mechanical (peel, tensile and shear, fatigue, impact tests), chemical</li> <li>• shut down and make safe the welding equipment on completion of the welding activities</li> <li>• follow the established organizational process for dealing with the welded pieces including handover, storage, safety and security, record keeping, etc.</li> </ul>	<p>Fracture Testing and Dp Testing Facility.</p> <ul style="list-style-type: none"> <li>• Gas Cutting with Pug Attachment</li> </ul>
5	<b>Perform</b>	<ul style="list-style-type: none"> <li>• work safely at all times, complying with health and</li> </ul>	<ul style="list-style-type: none"> <li>• Trainer Guide</li> </ul>



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Tungsten Inert Gas (TIG) Welding also known as Gas Tungsten Arc Welding (GTAW) Welding)</b></p> <p><b>Theory Duration</b> (hh:mm) 40:00</p> <p><b>Practical Duration</b> (hh:mm) 160:00</p> <p><b>Corresponding NOS Code</b> HYC/N 9104</p>	<p>safety legislation, regulations and other relevant guidelines</p> <ul style="list-style-type: none"> <li>• adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations for TIG welding operations</li> <li>• check the condition of welding leads, gas connection arrangements, earthing arrangements and electrode holder</li> <li>• report any faults or potential hazards to appropriate authority</li> <li>• interpret weld procedure data sheets specifications Interpreting the WPS: welding process (ISO Codes); parent metal; consumables; pre-welding joint preparation</li> <li>• select welding machines e.g. transformer, inverters (AC/DC), rectifiers and generators, according to the materials and task</li> <li>• select proper welding torch and tungsten electrode that meet the job requirement and specification Selection and preparation of tungsten electrode: <ul style="list-style-type: none"> <li>• obtain filler wire according to specifications</li> <li>• prepare for the TIG welding process</li> <li>• prepare the materials and joint in readiness for welding</li> </ul> </li> <li>• select tungsten electrode by the colour of the tip according to base metal, and correct diameter</li> <li>• select and fit the welding shielding gases for a range of given applications</li> <li>• plan the welding activities before they start them effectively and efficiently for achieving specifications as per WPS Checking activities: correct set-up of the joint; proper condition of electrical connections; welding return and earthing arrangements; operating parameters</li> <li>• connect torches and the components Torch components: cables, water carrying tubes, ceramic nozzle, collet, collet holder, gas lens, Teflon washers, Bakelite cap, ceramic shields/nozzles</li> <li>• connect and adjust regulators and flow meters to cylinders</li> <li>• read, set and adjust current (amperage) as required</li> <li>• set pre-purge with shielding gas as required</li> <li>• prepare tungsten by sharpening or balling it to desired tip shape</li> <li>• set and verify gas flow rates</li> <li>• prepare and support the joint, using the appropriate methods</li> </ul>	<ul style="list-style-type: none"> <li>• Participant hand book</li> <li>• Escalation matrix chart</li> <li>• Class Room</li> <li>• White Board &amp; Markers</li> <li>• LCD Projector</li> <li>• TIG welding machine</li> <li>• Tungsten electrode, filler wire,</li> <li>• Ut Testing, Fracture Testing and Dp Testing Facility.</li> <li>• Gas Cutting with Pug Attachment</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding</li> <li>• obtain clearance from quality control for weld joint before welding</li> <li>• match feed and travel speed as required</li> <li>• perform TIG welding operations using appropriate welding techniques to meet welding procedure pacification requirements</li> <li>• use correct technique for starting the arc (using HF (high frequency) unit, scratching the electrode on the job material, lifting the electrode immediately</li> <li>• use correct angle of torch and filler wire</li> <li>• weld the joint to the specified quality, dimensions and profile</li> <li>• use manual welding and related equipment, to carry out TIG welding processes</li> <li>• use welding consumables appropriate to the material and application, to include AC current types and DC current types</li> <li>• produce joints of the required quality and of specified dimensional accuracy</li> <li>• use both methods to produce the various joints a) with filler wire b) without filler wire (autogenously)</li> <li>• produce joints from various materials in different forms Materials: ferrous: carbon steel, stainless steel (all grades); non-ferrous: aluminum and aluminum alloys; nickel and nickel alloys; titanium; copper and copper alloys</li> <li>• weld joints in good access situations, in select positions</li> <li>• shut down and make safe the welding equipment on completion of the welding activities</li> <li>• make sure that the work area is maintained and left in a safe and tidy</li> <li>• use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the weld are to the specification</li> <li>• check that the welded joint conforms to the specification, by checking various quality parameters using visual inspection Quality parameters: dimensional accuracy; alignment/squareness; size and profile of weld; visual defects; NDT/DT tested defects</li> <li>• identify various weld defects Types of weld defects: lack of continuity of the weld; uneven and irregular</li> <li>• detect surface imperfections and deal with them appropriately</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• carry out LPT tests to assess fine defect open to the surface not detected by visual inspection (VT)</li> <li>• assist in preparation for non-destructive testing of the welds for a range of Tests Non-destructive tests (NDT): visual inspection, leak test: dye penetrant (DPT), fluorescent penetrant (FPT); magnetic particle (MPT); radiographic (RT); ultrasonic (UT)</li> <li>• prepare for destructive tests on weld specimens for select tests</li> <li>• Destructive tests (DT): nick break test; bend tests (such as face, root or side, as appropriate); metallographic; mechanical (peel, tensile and shear, fatigue, impact tests); chemical</li> <li>• follow the established organizational process for dealing with the welded pieces including handover, storage, safety and security, record keeping, etc.</li> <li>• Ability do the following related operation</li> <li>• Oxy fuel Cutting-Type of gas its property and application, Colour coding of cylinder, Lighting of cutting charger, controlling of gas, Selection of cutting nozzle, Introduction to process</li> <li>• Manual Cutting-Safety on handling gas cylinders, setting up cylinders and cutting torch, Regulators flash back and back fire arrestors, Process of cutting</li> <li>• Straight cutting, bevel cutting Machine Cutting-PUG cutting machine and its parts and functions, Setting machine and machine parameters, Straight, bevel and circular cutting, Plasma Cutting-Equipment, precautions, parameters process</li> <li>• Ability to do pipe welding following the practice: Types of pipe welding, Preparation of pipes, Welding procedure in different position, Different welding processes and their advantages and disadvantages.</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
6.	<p><b>basic, health, safety and security procedures</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 80:00</p> <p><b>Corresponding NOS Code</b> HYC/N 6104</p>	<ul style="list-style-type: none"> <li>• use protective clothing/equipment for specific tasks and work Conditions</li> <li>• state the name and location of people responsible for health and safety in the workplace</li> <li>• state the names and location of documents that refer to health and safety in the workplace</li> <li>• identify job-site hazardous work and state possible causes of risk or accident in the workplace</li> <li>• carry out safe working practices while dealing with hazards to ensure the safety of self and others</li> <li>• state methods of accident prevention in the work environment of the job role Methods of accident prevention: training in health and safety procedures; using health and safety procedures; use of equipment and working practices (such as safe carrying procedures); safety notices, advice; instruction from colleagues and supervisors</li> <li>• state location of general health and safety equipment in the workplace</li> <li>• inspect for faults, set up and safely use steps and ladders in general use</li> <li>• work safely in and around trenches, elevated places and confined areas</li> <li>• lift heavy objects safely using correct procedures</li> <li>• apply good housekeeping practice</li> <li>• identify common hazard signs displayed in various areas</li> <li>• retrieve and/or point out documents that refer to health and safety in the workplace</li> <li>• use the various appropriate fire extinguishers on different types of fires correctly</li> <li>• demonstrate rescue techniques applied during fire hazard</li> <li>• demonstrate good housekeeping in order to prevent fire hazards</li> <li>• demonstrate the correct use of a fire extinguisher</li> <li>• List issue concerning the safety and familiar in your work style</li> <li>• Empower to address the unsafe condition in your work place or to stop the unsafe behavior</li> <li>• Record all miss incidents, damages, illness or injury</li> <li>• Comprehend the applicable laws, regulations and codes as per standard</li> <li>• Promote and maintain a positive safety culture</li> <li>• Apply and appraise the use and storage of hazardous substance and their safety</li> <li>• Assess the threats and to protect from the threats</li> <li>• Awareness of own safety and safety of others</li> </ul>	<ul style="list-style-type: none"> <li>• demonstration with fire and safety,</li> <li>• ppt for shop and self-safety.</li> <li>• Daily housekeeping and 5s working,</li> <li>• Daily pledge for safety morning and in the evening.</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Bring the concern and report the HSE concern</li> <li>• Report all incident to the supervisor</li> <li>• Identifies and describes the property of different petroleum products.</li> <li>• Operates and handle spills and respond to the spills</li> <li>• demonstrate how to free a person from electrocution</li> <li>• Administer appropriate first aid to victims were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.</li> <li>• demonstrate basic techniques of bandaging</li> <li>• respond promptly and appropriately to an accident situation</li> <li>• perform and organize loss minimization or rescue activity during an accident in real or simulated environments</li> <li>• administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases</li> <li>• demonstrate the artificial respiration and the CPR Process</li> <li>• participate in emergency procedures</li> <li>• complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report includes details of: name, date/time of incident, date/time of report, location, environment conditions, persons involved, sequence of events, injuries sustained, damage sustained, actions taken, witnesses, supervisor/manager notified</li> <li>• demonstrate correct method to move injured people and others during an emergency</li> </ul>	
	<p><b>Work effectively in a team</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 80:00</p>	<ul style="list-style-type: none"> <li>• maintain clear communication with colleagues</li> <li>• work with colleagues as a team</li> <li>• pass on information to in line with organizational requirements</li> <li>• work in ways that show respect for colleagues</li> <li>• carry out commitments made to colleagues</li> <li>• let colleagues know in good time if cannot carry out commitments, explaining the reasons</li> <li>• identify problems in working with colleagues and take the initiative to solve these problems</li> <li>• follow the organization's policies and procedures for working with colleagues</li> <li>• ability to share resources with other members as</li> </ul>	<ul style="list-style-type: none"> <li>• software skill for attitude, behavior, English speaking, reading, writing.</li> <li>• Computer skill for working atmosphere.</li> <li>• Field visits for the industry for adapting</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<b>Corresponding NOS Code</b> HYC/N 6103	per priority of tasks	industrial environment. • Yoga classes for keeping fit throughout the day.
	<b>Total Duration</b> <b>1000:00</b>  <b>Theory Duration</b> <b>200:00</b>  <b>Practical Duration</b> <b>800:00</b>	<b>Unique Equipment Required:</b> <ul style="list-style-type: none"> <li>Safety helmet, Types of log book, First Aid box, Participant hand book, LCD Projector, Laptop and Speakers.</li> </ul>	

**Grand Total Course Duration: 1000 Hours, 0 Minutes**

**Trainer Prerequisites for Job role: “Retail Outlet Attendant (Oil & Gas)” mapped to Qualification Pack: “HYC/Q 3101”**

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “HYC/Q 9101”.
2	<b>Personal Attributes</b>	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well organized and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	<b>Minimum Educational Qualifications</b>	Minimum-Diploma
4a	<b>Domain Certification</b>	Certified for Job Role: “ <u>Industrial Welder (Oil &amp; Gas)</u> ” mapped to QP: “HYC/Q 9101”. Minimum accepted score is 80%
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q 1402”. Minimum accepted score is 80%.
5	<b>Experience</b>	Minimum 5 years of industry experience in relevant job role and a Minimum of 3 years Training experience in relevant job role.

## Annexure: Assessment Criteria

<b>Job Role:</b> Industrial Welder (Oil & Gas) <b>Qualification Pack:</b> HYC/Q 9101 <b>Sector Skill Council:</b> Hydrocarbon Sector Skill Council						
<b>Guidelines for Assessment</b>  1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC 2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC 3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training Centre (as per assessment criteria below) 4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training Centre based on these criteria 5. To pass the Qualification Pack, every trainee should score a minimum of 60% in every NOS 6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack						
Outcomes to be assessed			Assessment criteria for the outcome			
			Total marks 550	Out of	Theory	Practical skills
HYC/N 9101 General workshop practice followed in the shop floor.	<b>Understand the basic Engineering practice</b>	PC1.Consistently apply and promote health and safety legislation and best practice and work in a safe manner on a worksite	100	3	1	2
		PC2.Health and safety legislation and best practice		2	0	2
		PC3.The range and uses of trade related equipment's		3	1	2
		PC4.How to use and operate tools safely		2	0	2
		PC5.Specific safety issues relating to work involving cutting tools		2	1	1
		PC6.The importance of working logically and in a well-organized manner.		2	1	1
		PC7.Operate trade machinery effectively, safely and in accordance with manufacturers' instructions		3	1	2



		PC8.Select and use appropriate machine tools safely and effectively		3	1	2
	<b>Mathematical skills with respect to welding</b>	PC9. Basic mathematical manipulation and unit conversion		3	1	2
		PC10.Geometrical principles, techniques and calculations		2	1	1
		PC11.Understand basic mathematical calculation.		2	1	1
		PC12. Select and apply basic Calculation of area and volume		2	1	1
		PC13.use appropriate mathematical concepts and skills to solve problems in Fractions, Decimals, Percentage and ratio		2	1	1
		PC14.Develop ability to perform basics of Algebra and understand Simple algebraic equations and problems		2	1	1
		PC15.Acquire the techniques of solving simple Trigonometric problems		2	1	1
		<b>Knowledge on different types of materials and Heat Treatment</b>	PC16. Ability to apply knowledge of Metals and non-metals		3	1
	PC17. Types and characteristics of materials used in the manufacturing industry			2	1	1
	PC18.Ability to identify Ferrous and non-ferrous metals			3	1	2
	PC19Ability to integrate Steel - Properties and applications of the following Carbon Steels and Alloy Steels (With Reference to welding)			2	1	1
	PC20Apply the basic principles of material selection to specific applications Stainless Steel			2	1	1
	PC21. Highlight the property of different material and their workability.			3	1	2
	PC22Explain the differences in properties of different materials, including metals, alloys, ceramics, polymers and composites			2	1	1
	PC23.Describe the basics of Heat			2	1	1

		treatment principles				
		PC24.Highlight Different Heat treatment operations, their purpose	3	1	2	
		PC25.Apply and explain the application of Stress relieving with reference to welding	2	0	2	
	<b>Fundamentals of Electricity</b>	PC26.Understanding written sentences and paragraphs in work related documents.	2	0	2	
		PC27.Primary electrical supply circuit terminology and its operation	2	0	2	
		PC28.Secondary electrical / welding circuit terminology and operation	2	1	1	
		PC29.Knowledge of the practical application of electricity a technology.	2	1	1	
		PC30.This includes applying principles, techniques, procedures like AC and DC current, Single phase circuit and Three phase circuit etc	3	1	2	
		PC31.Perform routine maintenance on equipment and determining when and what kind of maintenance is needed. Will, require you to manage systems and ensure they work smoothly.	2	1	1	
		PC32.Testing existing wiring for safety and quality control.	2	1	1	
		PC33. Understanding of work shop safety and welding Safety	2	1	1	
		<b>Knowledge on basic workshop practice and tools used</b>	PC34.To be able to work independently or as part of a team in the following areas <b>Filing</b> -Files – types, Specification, Application care and maintenance, Filing – straight filing, cross filing, Vices – Types and its application Safety	3	1	2
			PC35.Understand the task required and plan ahead what steps must be taken to achieve the outcome. <b>Hack Sawing</b> -Types of hack saw blades, Specification, Application, Hack sawing-selection of blade, fixing blade, Hack sawing procedure Safety and precautions,	3	1	2
	PC36.Cary out marking on the materials as per the drawing using <b>Marking</b> -Scribers, dot punch, centre punch, letter and – no punches		3	1	2	

		Scribing and punching procedure			
		PC37. Will be able to do the drilling as per <b>Drilling</b> -Specification of drills, Selection of drills, Drilling machine-types specification application, care and maintenance. Tools holding methods, work holding methods, determination of RPM	2	0	2
		PC38. Set up and adjust metalworking tools and do threading <b>Tapping</b> -Specification of taps, Determination of tap drill size for tapping, Tapping procedure and care	3	1	2
		PC39. Set up and/or operate hand tools <b>Chisels</b> -Types of chisels, Specification, Application, Precautions to be taken while chiselling.	2	0	2
		PC40. Correctly use and maintain the tools <b>Hammers</b> -Types of hammers, Specification, Application <b>Spanners, Fasteners</b> -Types, Specification, Application  PC41. Measure and mark materials as per the drawing and Check accuracy and quality of finished parts <b>Measuring / Checking Instruments</b> - Steel rule and tape- Application, specification and care, Inside and Outside Calliper- Application, specification and care, Vernier Calliper- Application, specification and care, Micro meter- Application, specification and care, Radius and Fillet Gauges, use and care	3	1	2
		PC42. Safe operation of equipment and apply occupational health and safety policy and procedures to minimise risk.	3	1	2
		PC43. Knowledge and ability to use different hand tools and power tools	2	0	2

		Total.		100	34	66
HYC/N 9102 <u>Welding using Manual Metal Arc welding/Shielded metal arc welding</u>	<b>Element</b>	PC1. work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines	100	3	1	2
		PC2. adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations		2	1	1
		PC3. check the condition of, welding leads, earthing arrangements and electrode holder		2	0	2
		PC4. report any faults or potential hazards to appropriate authority		2	0	2
		PC5. follow fume extraction safety procedures		2	0	2
	<b>Welding Process</b>	PC6. Explain different types of welding		2	1	1
		PC7. Use specific terminology used in the welding industry		2	1	1
		PC8. The selection, use and techniques of the various welding process		2	1	1
		PC9. The most Common Welding Processes		2	2	0
		PC10. What are the different Welding Terminology		2	2	0
	<b>Welding Equipment's</b>	PC11.Able to differentiate AC/DC Machines		2	0	2
		PC12.Narrate and justify the advantages of DC machines		2	1	1
		PC13.Know how the specification of DC machines are done		2	2	0
		PC14.Ability to select the machine as per job specification Practical Setup the machine for welding		2	1	1
		PC15.What all Care and maintenance of machine		3	1	1
		PC16.Arc welding accessories - Electrode holder, Earth lamp welding cables		2	0	2
		PC17.The selection and use of safety equipment related to specific or dangerous tasks		3	1	2
		PC18.Knowledge on components of the Essential equipment required for welding are:		2	1	1
	<b>Welding preparation</b>	PC20.Ability to interpretation of welding / engineering drawings and weld symbols welding procedure		4	1	3

		<p>specifications and standard operating procedures as given below-welding process (ISO codes); parent metal</p> <p>consumables, pre-welding, joint preparation (edge preparation, assembly, pre-heat)</p> <p>welding parameters</p> <p>welding positions</p> <p>weld joints</p> <p>electrode sizes for joint thicknesses</p> <p>electrode &amp; covering</p> <p>electrical conditions required</p> <p>electrode polarity</p> <p>welding techniques(string/weave)</p> <p>welding sequence heat input control</p> <p>bead length/travel speed</p> <p>preheat/ post heat</p> <p>inter pass run cleaning/back gouging methods</p> <p>post welding activities</p> <p>post-weld heat treatment.</p>				
		PC21. Correct alignment of process with material being used	2	1	1	
		PC22. How surface contamination can influence the finished weld characteristics	2	1	1	
		PC23. The correct machine settings to be aligned to:	2	1	1	
		PC24. Use the correct welding electrodes Types of electrodes Specification of electrodes AWS coding of electrodes Selection of electrodes	2	1	1	
		PC25. The characteristics and properties of filler materials	2	1	1	

		PC26.The methods of edge preparation to align with joint profile, strength, material and drawing specification	2	1	1
		PC27.perform measurements for joint preparation and routine MMAW	2	1	1
		prepare the materials and joint in readiness for welding, made rust free, cleaned – free from scaling, paint, oil/grease; made dry and free from moisture, edges to be welded prepared as per job requirement - such as flat, square or bevelled	2	1	1
		PC28.use manual metal-arc welding and related equipment to include  alternating current (AC) equipment  direct current (DC) equipment	2	1	1
		PC29.report any faults or problem to appropriate authority	2	1	1
	<b>Carrying out welding operations</b>	PC30. strike and maintain a stable arc	2	1	1
		PC31. stop and properly re-start arcs to avoid welding defects (scratch start, tapping techniques)	2	1	1
		PC32 maintain constant puddle by using appropriate travel speed	2	1	1
		PC33. maintain proper bead sequence with respect to groove/fillet configurations and positions	2	1	1
		PC34. remove slag in an appropriate manner (eg. wire brush, hammer, etc.)	2	1	1
		PC35. produce welded joints to the specified quality, dimensions and profile	2	1	1
		PC36. produce fillet and grove joints in 1F/1G, 2F/2G and 3F/ 3G welding positions as per the WPS specified using single or multi-run welds	2	1	1

		PC37. deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve		2	1	1
		PC38. produce joints on carbon and low alloy steel materials using various methods: drag, weave, whip		2	1	1
		PC39. shut down and make safe the welding equipment on completion of the welding activities				
	<b>Testing for quality</b>	PC40. measure and check that all dimensional and geometrical aspects of the weld are as per instructions		4	1	3
		PC41. check that the welded joint conforms to the instructions given, by checking various quality parameters by visual inspection		4	1	3
		PC42. identify various weld defects using visual inspection		4	1	3
		PC43. Detect and report surface imperfections to appropriate authority		4	1	3
		PC44. deal with defects in welding as per instructions given		4	1	3
		TOTAL		100	41	59
HYC/N 9103 <u>Manually (semi-automatic) welding joints using the MIG/MAG</u>	<b>Work Safely</b>	PC1.work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines	100	5	2	3
		PC2.adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations for MIG/MAG welding operations		5	2	3

		PC3.check the condition of welding leads, gas connection arrangements, earthing arrangements and electrode holder	3	1	2
		PC4.report any faults or potential hazards to appropriate authority	3	1	2
	<b>Prepare for welding operations</b>	PC5.interpret weld procedure data sheets specifications, PQR and WPS	3	1	2
		PC6.select welding machines such as inverters, rectifiers and generators, according to the task	3	1	2
		PC7. select electrodes according to classification and specifications PC8. prepare the materials and joint in readiness for welding	4	2	2
		PC9.check the condition of, and correctly connect, welding leads/cables, hoses, shielding gas supply and wire feed mechanisms	4	2	2
		PC10.prepare the welding equipment for a range of given applications <b>Welding equipment:</b> rectifier	3	1	2
		PC12.plan the welding activities before they start them effectively and efficiently for achieving specifications as per WPS	4	2	2
		PC13. clean wire feeder and torch tip	3	1	2
		PC14. connect torches and components	3	1	2
		PC15. connect and adjust regulators and flow meters to cylinders	3	1	2
		PC16. adjust wire feed rate and read and set current as required	3	1	2
		PC17.set other welding parameters (eg. voltage, slope of current versus voltage curve where required)	4	2	2
		PC18. choose appropriate mode of metal transfer	3	1	2
		PC19. set pre-purge with shielding gas as required	3	1	2
		PC20. set and verify gas flow rates	3	1	2
	PC21. prepare and support the joint, using the appropriate methods	3	1	2	



		PC22.tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding		3	1	2
	<b>Carry out welding operations</b>	PC23.use manual welding and related equipment, to carry out MIG/MAG welding processes		3	1	2
		PC24.perform MIG/MAG welding operations using various welding techniques to meet welding procedure specification requirements		5	2	3
		PC25. adjust wire stick-out as per requirement		3	1	2
		PC26.use welding consumables appropriate to the material and application to DC current types		3	1	2
	<b>Post welding activities</b>	PC35. assist in preparation for non-destructive testing of the welds, for a range of tests <b>Non-destructive tests (NDT)</b> : dye penetrant (DPT), fluorescent penetrant (FPT), magnetic particle (MPT)		4	2	2
		PC36. prepare for destructive tests on weld specimens for fillet, butt and corner <b>Destructive tests (DT)</b> : macro examination, nick break test, bend tests (such as face, root or side, as appropriate), mechanical (peel, tensile and shear, fatigue, impact tests), chemical		4	2	2
		PC37. shut down and make safe the welding equipment on completion of the welding activities		4	2	2
		PC38. follow the established organisational process for dealing with the welded pieces including handover, storage, safety and security, record keeping, etc.		4	2	2
				100	40	60

HYC/N 9104 Manually welding joints using the TIG (GTAW) Process	<b>Work Safely</b>	PC1.work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines	100	2	1	1
		PC2.adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations for TIG welding operations		2	1	1
		PC3.check the condition of welding leads, gas connection arrangements, earthing arrangements and electrode holder		2	1	1
		PC4.report any faults or potential hazards to appropriate authority		2	0	2
		PC5.interpret weld procedure data sheets specifications <b>Interpreting the WPS:</b> welding process (ISO Codes); parent metal; consumables; pre-welding joint preparation		2	1	1
		PC6.select welding machines e.g. transformer, inverters (AC/DC), rectifiers and generators, according to the materials and task		2	1	1
		PC7.select proper welding torch and tungsten electrode that meet the job requirement and specification <b>Selection and preparation of tungsten electrode:</b>		2	1	1
		PC8.obtain filler wire according to specifications		2	1	1
		PC9.prepare for the TIG welding process		2	1	1
		PC10. prepare the materials and joint in readiness for welding		2	1	1
		PC11.select tungsten electrode by the colour of the tip according to base metal, and correct diameter		2	1	1
PC12. select and fit the welding shielding gases for a range of given applications	2	1	1			
PC13. plan the welding activities before they start them effectively and efficiently for achieving specifications as per WPS <b>Checking</b>	2	1	1			

		<b>activities:</b> correct set-up of the joint; proper condition of electrical connections; welding return and earthing arrangements; operating parameters			
		PC14. connect torches and the components <b>Torch components:</b> cables, water carrying tubes, ceramic nozzle, collet, collet holder, gas lens, Teflon washers, Bakelite cap, ceramic shields/nozzles	2	1	1
		PC15. connect and adjust regulators and flow meters to cylinders	2	1	1
		PC16. read, set and adjust current (amperage) as required	2	1	1
		PC17. set pre-purge with shielding gas as required	2	1	1
		PC18. prepare tungsten by sharpening or balling it to desired tip shape	2	1	1
		PC19. set and verify gas flow rates	2	1	1
		PC20. prepare and support the joint, using the appropriate methods	2	1	1
		PC21.tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding	2	1	1
		PC22. obtain clearance from quality control for weld joint before welding	2	1	1
		PC23. match feed and travel speed as required	2	1	1
	<b>Carry out welding operations</b>	PC24. perform TIG welding operations using appropriate welding techniques to meet welding procedure pacification requirements	2	1	1
		PC25. use correct technique for starting the arc (using HF (high frequency) unit, scratching the electrode on the job material, lifting the electrode immediately	2	1	1
		PC26. use correct angle of torch and filler wire	2	1	1
		PC27. weld the joint to the specified quality, dimensions and profile	2	1	1
		PC28. use manual welding and related equipment, to carry out TIG welding processes	2	1	1

		PC29. use welding consumables appropriate to the material and application, to include AC current types and DC current types	2	1	1
		PC30. produce joints of the required quality and of specified dimensional accuracy	2	1	1
		PC31. use both methods to produce the various joints a) with filler wire b) without filler wire (autogenously)	2	1	1
		PC32. produce joints from various materials in different forms <b>Materials:</b> ferrous: carbon steel, stainless steel (all grades); non-ferrous: aluminium and aluminium alloys; nickel and nickel alloys; titanium; copper and copper alloys	2	1	1
		PC33. weld joints in good access situations, in select positions	2	1	1
		PC34. shut down and make safe the welding equipment on completion of the welding activities	2	1	1
		PC35. make sure that the work area is maintained and left in a safe and tidy	2	1	1
	<b>Test for quality</b>	PC36. use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the weld are to the specification	2	1	1
		PC37. check that the welded joint conforms to the specification, by checking various quality parameters using visual inspection Quality parameters: dimensional accuracy; alignment/squareness; size and profile of weld; visual defects; NDT/DT tested defects	3	1	1
		PC38. identify various weld defects Types of weld defects: lack of continuity of the weld; uneven and irregular ripple formation, incorrect weld size or profile, undercutting, overlap, inclusions, porosity, internal cracks, surface cracks, lack of fusion, lack of penetration, welding spatter, gouges, stray arc strikes, sharp edges	2	1	1
		PC39. detect surface imperfections and deal with them appropriately	2	1	1
		PC40. carry out LPT tests to assess fine defect open to the surface not	2	1	1

		detected by visual inspection (VT)			
	<b>Post welding activities</b>	PC41. assist in preparation for non-destructive testing of the welds for a range of Tests <b>Non-destructive tests (NDT)</b> : visual inspection, leak test: dye penetrant (DPT), fluorescent penetrant (FPT); magnetic particle (MPT); radiographic (RT); ultrasonic (UT)	2	1	1
		PC42. prepare for destructive tests on weld specimens for select tests <b>Destructive tests (DT)</b> : nick break test; bend tests (such as face, root or side, as appropriate); metallographic; mechanical (peel, tensile and shear, fatigue, impact tests); chemical	3	1	2
		PC43. follow the established organisational process for dealing with the welded pieces including handover, storage, safety and security, record keeping, etc.	2	1	1
	<b>Other related operation</b>	PC44. Ability do the following related operation  <b>Oxy fuel Cutting</b> -Type of gas its property and application, Colour coding of cylinder, Lighting of cutting charger, controlling of gas, Selection of cutting nozzle, Introduction to process  <b>Manual Cutting</b> -Safety on handling gas cylinders, setting up cylinders and cutting torch, Regulators flash back and back fire arrestors, Process of cutting  Straight cutting, bevel cutting <b>Machine Cutting</b> -PUG cutting machine and its parts and functions, Setting machine and machine parameters, Straight, bevel and circular cutting, Plasma <b>Cutting</b> -Equipment, precautions, parameters process	4	1	3
		PC45.Ability to do pipe welding following the practice: Types of pipe welding, Preparation of pipes, Welding procedure in different position, <b>Different</b> welding processes and their advantages and disadvantages.	4	1	3

				100	44	56
HYC/N 6104 <u>Use basic, health, safety and security procedures</u>	Health and safety	PC1.use protective clothing/equipment for specific tasks and work  Conditions	100	2	1	1
		PC2.state the name and location of people responsible for health and safety in the workplace		2	1	1
		PC3.state the names and location of documents that refer to health and safety in the workplace		2	1	1
		PC4.identify job-site hazardous work and state possible causes of risk or accident in the workplace		2	1	1
		PC5.carry out safe working practices while dealing with hazards to ensure the safety of self and others		2	1	1
		PC6.state methods of accident prevention in the work environment of the job role Methods of accident prevention: training in health and safety procedures; using health and safety procedures; use of equipment and working practices (such as safe carrying procedures); safety notices, advice; instruction from colleagues and supervisors		3	1	2
		PC7.state location of general health and safety equipment in the workplace		2	1	1
		PC8.inspect for faults, set up and safely use steps and ladders in general use		2	1	1
		PC9.work safely in and around trenches, elevated places and confined areas		2	1	1
		PC10. lift heavy objects safely using correct procedures		2	1	1
		PC11. apply good housekeeping		2	1	1

		practices			
		PC12. identify common hazard signs displayed in various areas	2	1	1
		PC13.retrieve and/or point out documents that refer to health and safety in the workplace	2	1	1
	Fire safety	PC14. use the various appropriate fire extinguishers on different types of fires correctly	3	1	2
		PC15. demonstrate rescue techniques applied during fire hazard	3	1	2
		PC16. demonstrate good housekeeping in order to prevent fire hazards	3	1	2
		PC17. demonstrate the correct use of a fire extinguisher	3	1	2
	Safety systems	PC18. List issue concerning the safety and familiar in your work style	3	1	2
		PC19. Empower to address the unsafe condition in your work place or to stop the unsafe behaviour	3	1	2
		PC20. Record all miss incidents, damages, illness or injury	2	1	1
		PC21. Comprehend the applicable laws, regulations and codes as per standard	3	1	2
		PC22. Promote and maintain a positive safety culture	2	1	1
		PC23. Apply and appraise the use and storage of hazardous substance and their safety	3	1	2
		PC24. Assess the threats and to protect from the threats	2	1	1
		PC25. Awareness of own safety and safety of others	3	1	2
		PC26. Bring the concern and report the HSE concern	2	1	1

		PC27. Report all incident to the supervisor	3	1	2
		PC28. Identifies and describes the property of different petroleum products.	2	1	1
		PC29. Operates and handle spills and respond to the spills	3	1	2
	Emergencies, rescue and first-aid procedures	PC30. demonstrate how to free a person from electrocution	2	1	1
		PC31. Administer appropriate first aid to victims were required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.	3	1	2
		PC32. demonstrate basic techniques of bandaging	2	1	1
		PC33. respond promptly and appropriately to an accident situation	3	1	2
		PC34. perform and organize loss minimization or rescue activity during an accident in real or simulated environments	3	1	2
		PC35. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases	3	1	2
		PC36. demonstrate the artificial respiration and the CPR Process	2	1	1
		PC37. participate in emergency procedures	2	1	1
		PC38. complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report includes details of: name, date/time of incident, date/time of report, location, environment conditions, persons involved, sequence of events, injuries sustained, damage sustained, actions taken, witnesses,	5	2	3



		supervisor/manager notified				
		PC39. demonstrate correct method to move injured people and others during an emergency		2	1	1
		TOTAL		100	41	59
HYC/N 6103 <u>Work effectively in a team</u>	Compulsory	PC1. maintain clear communication with colleagues	50	5	2	3
		PC2. work with colleagues as a team		5	2	3
		PC3. pass on information to in line with organisational requirements		6	2	4
		PC4. work in ways that show respect for colleagues		5	2	3
		PC5. carry out commitments made to colleagues		6	2	4
		PC6. let colleagues know in good time if cannot carry out commitments, explaining the reasons		6	2	4
		PC7. identify problems in working with colleagues and take the initiative to solve these problems		5	2	3
		PC8. follow the organisation's policies and procedures for working with colleagues		6	3	3
		PC9. ability to share resources with other members as per priority of tasks		6	3	3
		TOTAL		50	21	29