



# Model Curriculum

## Welding Technician Level 3

**SECTOR:** AUTOMOTIVE  
**SUB-SECTOR:** MANUFACTURING  
**OCCUPATION:** WELDING  
**REF ID:** ASC/Q3102, v1.0  
**NSQF LEVEL:** 3



## Certificate

### CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**AUTOMOTIVE SKILL DEVELOPMENT COUNCIL**

for the

### MODEL CURRICULUM

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: 'Welding Technician Level 3'  
QP No. 'ASC/Q3102 NSQF Level 3'

Date of Issuance: January 24<sup>th</sup>, 2019

Valid up to\*: January 23<sup>rd</sup>, 2022

\*Valid up to the next review date of the Qualification Pack

Authorised Signatory  
(Automotive skill development council)



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# Welding Technician Level 3

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Welding Technician Level 3”, in the “Automotive” Sector/Industry and aims at building the following key competencies amongst the learner.

<b>Program Name</b>	<b>Welding Technician Level 3</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	ASC/Q3102, v1.0		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	01 <sup>st</sup> April 2019
<b>Pre-requisites to Training</b>	<ul style="list-style-type: none"> <li>• Class 10</li> </ul>		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• Identify welding requirements and the related processes</li> <li>• Prepare the welding machine for the welding process.</li> <li>• Perform various Welding activities.</li> <li>• Conduct quality checks and inspection of the finished products.</li> <li>• Conduct regular cleaning and maintenance of the equipment.</li> <li>• Follow proper guidelines for storage of the finished goods and tools</li> <li>• Maintain a safe and healthy working environment.</li> <li>• Maintaining 5S at the work premises.</li> </ul>		

This course encompasses 8 out of 8 National Occupational Standards (NOS) of “Welding Technician Level 3” Qualification Pack issued by “Automotive Skill Development Council (ASDC)”.

Sr. No.	Module	Key learning outcomes	Equipment Required
1	<p><b>Introduction</b></p> <p><b>Theory Duration</b> (hh:mm) 02:00</p> <p><b>Practical Duration</b> (hh:mm) 00:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>Describe the role and responsibilities of a Welding Technician Level 3.</li> <li>List different types of products manufactured by the company.</li> <li>Interpret standard operating procedure (SOP) to implement quality culture at the organisation.</li> <li>Describe safety requirements for equipment, auto components and aggregates.</li> <li>Explain professional code of conduct.</li> <li>Describe safety, health policies and regulations at the workplace.</li> </ul>	Training Kit (Presentations, Trainer Guide).
2	<p><b>Identify the job requirements and related processes</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 30:00</p> <p><b>Corresponding NOS Code</b> ASC/N3103</p>	<ul style="list-style-type: none"> <li>Describe relevant standards and procedures followed in the company.</li> <li>Explain various functional processes like procurement, store management, inventory management, quality management and key contact points for query resolution.</li> <li>Interpret all engineering drawings and sketches related to the work output to understand the measurement and shape of the required work output.</li> <li>Interpret the work order (work output) as required from the process.</li> <li>Clarify any doubts or queries regarding the work output from concerned authority.</li> <li>Explain different types of welding processes and associated equipment.</li> <li>List the features of different types of joints.</li> <li>Explain the impact of various physical parameters like temperature, pressure, electrode distance on the properties of final output product like durability, ductility, surface feel etc.</li> <li>Explain the basic principles of geometry and drawing.</li> <li>Escalate the queries to the Operator/ Welder if they cannot be resolved by the Assistant Welder on own.</li> <li>Resolve all doubts &amp; queries before the actual process execution in consultation with the operator or supervisor.</li> <li>Follow the health and safety precautions in the manufacturing process as defined in SOPs/ Work Instructions or as defined by supervisors.</li> </ul>	Training Kit (Presentations, Trainer Guide), personal protective equipment (PPE).
3	<p><b>Prepare the welding machine</b></p>	<ul style="list-style-type: none"> <li>Identify the right welding methodology and process to be adopted for completing the work order from the supervisor.</li> </ul>	Training Kit (Presentations, Trainer Guide),

	<p><b>for the welding process</b></p> <p><b>Theory Duration</b> (hh:mm) 14:00</p> <p><b>Practical Duration</b> (hh:mm) 30:00</p> <p><b>Corresponding NOS Code</b> ASC/N3104</p>	<ul style="list-style-type: none"> <li>Identify how to read and interpret sketches and engineering drawings.</li> <li>Identify the various welding parameters like temperature, pressure, electrode type, electrode distance (gap), Welding current, voltage, process time etc. before starting the welding process.</li> <li>Describe various materials used in welding &amp; their key properties.</li> <li>Identify the material required and the equipment availability for executing the activity.</li> <li>Select the correct type of electrode in terms of electrode material and thickness, filler material and flux which will be required for the selected welding process before the initiation of the welding process.</li> <li>Ensure that the required material is procured from the store before starting the welding process.</li> <li>Explain how to use measuring instruments like vernier calipers, micrometer.</li> <li>Describe different cleaning methods for electrodes, metal surfaces etc.</li> <li>Clean the surface of the electrodes and the welding gun to remove dust and any other impurities by collaborating with the helper.</li> <li>Clean other welding machine auxiliaries (Welding Transformer, Gas Discharge unit, Flux wire) before the initiation of the welding process.</li> <li>Set up the welding apparatus as per the selected welding process, the internal operating procedures and the setting standards for the machine.</li> <li>Clean the surface of the metal parts (work pieces) which need to be joined.</li> <li>Remove any extra material, sharp edges etc. which might impact the final welded product by using chippers, grinders etc.</li> <li>Ensure that the dimensions of the work pieces available on the welding line are as per the product drawing/ sketches available with the operator.</li> </ul>	<p>personal protective equipment (PPE), electrodes, welding gun, welding machine auxiliaries (Welding Transformer, Gas Discharge unit, Flux wire), cleaning and maintenance equipment, chippers, grinders etc.</p>
4	<p><b>Perform various Welding activities for MIG/MAG Welding</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 20:00</p>	<ul style="list-style-type: none"> <li>Describe quality norms prescribed by the organization for MIG/MAG (Metal Inert Gas/ Metal Active Gas) welding jobs.</li> <li>Describe how to decide on the key steps to be followed for MIG/MAG welding by visualising the final product output.</li> <li>Describe the safety precautions to be taken for MIG/MAG welding activities.</li> <li>Fix/hold the parts which need to be welded together as per MIG/MAG welding using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn.</li> </ul>	<p>Training Kit (Presentations, Trainer Guide), Generator, Inverter of suitable capacity, MIG/MAG Welding apparatus, core welding equipment like welding gun,</p>

	<p><b>Corresponding NOS Code</b> ASC/ N3105</p>	<ul style="list-style-type: none"> <li>Fix the work pieces on the MIG/MAG Welding apparatus keeping in mind the electrode distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work Instructions and as instructed by the operator/ welder or the supervisor.</li> <li>Check for optimal operation of core welding equipment of MIG/MAG welding like welding gun, welding transformer, gas cylinders, gas discharge units as per setup documentation instruction.</li> <li>Perform destructive and non-destructive tests to test the MIG/MAG welded workpiece as per instruction from the operator.</li> <li>Hold the Welding Gun and the Filler material/ Gas discharge in the MIG/MAG welding process as per instruction from the operator.</li> <li>Monitor the MIG/MAG welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode, distance etc.) by observing and communicating the readings on, various panels/ meters at the right time to prevent any harm to the work pieces due to overheating, burning and over melting as per instructions from the welder.</li> <li>Measure the final MIG/MAG welded piece and compare the dimensions as per the work order engineering drawing.</li> <li>Remove extra material by using chippers, grinders etc. in case the MIG/MAG welded parts are not as per the given measurements.</li> <li>Shape the MIG/MAG welded work pieces as per requirement by hammering the bulges.</li> <li>Communicate any inconsistency in the MIG/MAG welding process, quality issues etc. to the operator so that the same can be dealt with immediately.</li> </ul>	<p>welding transformer, gas cylinders, gas discharge units, Welding Gun, Filler material/ Gas discharge, destructive and non-destructive test kit apparatus, personal protective equipment (PPE).</p>
5	<p><b>Perform various Welding activities for TIG Welding</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 12:00</p> <p><b>Corresponding NOS Code</b> ASC/ N3105</p>	<ul style="list-style-type: none"> <li>Describe quality norms prescribed by the organization for TIG (Tungsten Inert Gas) welding jobs.</li> <li>Describe how to decide on the key steps to be followed for TIG welding by visualising the final product output.</li> <li>Describe the safety precautions to be taken for TIG welding activities.</li> <li>Fix/hold the parts which need to be welded together as per TIG welding using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn.</li> <li>Fix the work pieces on the TIG Welding apparatus keeping in mind the electrode distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work</li> </ul>	<p>Training Kit (Presentations, Trainer Guide), Generator, Inverter of suitable capacity, TIG Welding apparatus, core welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units, Welding Gun, Filler</p>



		<p>Instructions and as instructed by the operator/welder or the supervisor.</p> <ul style="list-style-type: none"> <li>• Check for optimal operation of core welding equipment of TIG welding like welding gun, welding transformer, gas cylinders, gas discharge units as per setup documentation instruction.</li> <li>• Perform destructive and non-destructive tests to test the TIG welded workpiece as per instruction from the operator.</li> <li>• Hold the Welding Gun and the Filler material/ Gas discharge in the TIG welding process as per instruction from the operator.</li> <li>• Monitor the TIG welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode, distance etc.) by observing and communicating the readings on, various panels/ meters at the right time to prevent any harm to the work pieces due to overheating, burning and over melting as per instructions from the welder.</li> <li>• Measure the final TIG welded piece and compare the dimensions as per the work order engineering drawing.</li> <li>• Remove extra material by using chippers, grinders etc. in case the TIG welded parts are not as per the given measurements.</li> <li>• Shape the TIG welded work pieces as per requirement by hammering the bulges.</li> <li>• Communicate any inconsistency in the TIG welding process, quality issues etc. to the operator so that the same can be dealt with immediately.</li> </ul>	<p>material/ Gas discharge, destructive and non-destructive test kit apparatus, personal protective equipment (PPE).</p>
6	<p><b>Perform various Welding activities for Resistance Welding</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> ASC/ N3105</p>	<ul style="list-style-type: none"> <li>• Describe quality norms prescribed by the organization for Resistance (Spot, Projection and Butt) welding jobs.</li> <li>• Describe how to decide on the key steps to be followed for Resistance welding by visualising the final product output.</li> <li>• Describe the safety precautions to be taken for Resistance welding activities.</li> <li>• Fix/hold the parts which need to be welded together as per Resistance welding using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn.</li> <li>• Fix the work pieces on the Resistance Welding apparatus keeping in mind the electrode distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work Instructions and as instructed by the operator/welder or the supervisor.</li> <li>• Check for optimal operation of core welding equipment of Resistance welding like welding gun, welding transformer, gas cylinders, gas</li> </ul>	<p>Training Kit (Presentations, Trainer Guide), Generator, Inverter of suitable capacity, Spot, Projection and Butt welding apparatus, core Resistance welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units, Welding Gun, Filler material/ Gas discharge, destructive and non-destructive</p>



		<p>discharge units as per setup documentation instruction.</p> <ul style="list-style-type: none"> <li>• Perform destructive and non-destructive tests to test the Resistance welded workpiece as per instruction from the operator.</li> <li>• Hold the Welding Gun and the Filler material/ Gas discharge in the Resistance welding process as per instruction from the operator.</li> <li>• Monitor the Resistance welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode, distance etc.) by observing and communicating the readings on, various panels/ meters at the right time to prevent any harm to the work pieces due to overheating, burning and over melting as per instructions from the welder.</li> <li>• Measure the final Resistance welded piece and compare the dimensions as per the work order engineering drawing.</li> <li>• Remove extra material by using chippers, grinders etc. in case the Resistance welded parts are not as per the given measurements.</li> <li>• Shape the Resistance welded work pieces as per requirement by hammering the bulges.</li> <li>• Communicate any inconsistency in the Resistance welding process, quality issues etc. to the operator so that the same can be dealt with immediately.</li> </ul>	<p>test kit apparatus, personal protective equipment (PPE).</p>
<p>7</p>	<p><b>Perform various Welding activities for Automatic or Robotic Welding</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> ASC/ N3105</p>	<ul style="list-style-type: none"> <li>• Describe quality norms prescribed by the organization for Automatic (Robotic) welding jobs.</li> <li>• Describe how to decide on the key steps to be followed for Automatic welding by visualising the final product output.</li> <li>• Describe the safety precautions to be taken for Automatic welding activities.</li> <li>• Fix/hold the parts which need to be welded together as per Automatic welding using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn.</li> <li>• Fix the work pieces on the Automatic Welding apparatus keeping in mind the electrode distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work Instructions and as instructed by the operator/ welder or the supervisor.</li> <li>• Check for optimal operation of core welding equipment of Automatic welding like welding gun, welding transformer, gas cylinders, gas discharge units as per setup documentation instruction.</li> <li>• Perform destructive and non-destructive tests to test the Automatic welded workpiece as per instruction from the operator.</li> </ul>	<p>Training Kit (Presentations, Trainer Guide), Generator, Inverter of suitable capacity, Automatic or Robotic welding apparatus, core Automatic welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units, Welding Gun, Filler material/ Gas discharge, destructive and non-destructive test kit apparatus, personal protective</p>

		<ul style="list-style-type: none"> <li>• Hold the Welding Gun and the Filler material/ Gas discharge in the Automatic welding process as per instruction from the operator.</li> <li>• Monitor the Automatic welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode, distance etc.) by observing and communicating the readings on, various panels/ meters at the right time to prevent any harm to the work pieces due to overheating, burning and over melting as per instructions from the welder.</li> <li>• Measure the final Automatic welded piece and compare the dimensions as per the work order engineering drawing.</li> <li>• Remove extra material by using chippers, grinders etc. in case the Automatic welded parts are not as per the given measurements.</li> <li>• Shape the Automatic welded work pieces as per requirement by hammering the bulges.</li> <li>• Communicate any inconsistency in the Automatic welding process, quality issues etc. to the operator so that the same can be dealt with immediately.</li> </ul>	<p>equipment (PPE).</p>
<p>8</p>	<p><b>Conduct quality checks and inspection of the finished products</b></p> <p><b>Theory Duration</b> (hh:mm) 14:00</p> <p><b>Practical Duration</b> (hh:mm) 24:00</p> <p><b>Corresponding NOS Code</b> ASC/N0007</p>	<ul style="list-style-type: none"> <li>• Describe relevant standards specified for the manufacturing process.</li> <li>• Explain the basic process followed for inspection of the work pieces.</li> <li>• Describe the Quality Management policy and manual of the organisation.</li> <li>• Record the observations of the basic inspection process and identify pieces which are OK and also those not meeting the specified standards.</li> <li>• Explain the various techniques of using measurement instruments like rulers, Vernier calipers, micrometre, weighing scale, gauges and other inspection equipment.</li> <li>• Measure the specifications of the finished product using devices like micrometers, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order.</li> <li>• Identify quality defects in work pieces.</li> <li>• Ensure that the texture, colour, surface properties, hardness and strength are as per the given product specifications.</li> <li>• Arrange the defective pieces into two categories – pieces which can be repaired/ modified and pieces which are beyond repair.</li> <li>• Maintain records of each category of work outputs.</li> <li>• Discard the pieces which are beyond repair.</li> <li>• Explain the methods which can repair pieces with minor defects such as cutting, shearing, hammering, drilling etc.</li> <li>• Repair the pieces which need minor modifications/ rework.</li> </ul>	<p>Training Kit (Presentations, Trainer Guide), inspection and quality management tools, such as measurement instruments like rulers, Vernier calipers, micrometre, weighing scale, gauges and other inspection equipment, cutting, shearing, hammering, drilling tools, personal protective equipment (PPE).</p>

		<ul style="list-style-type: none"> <li>Rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. By Fettling, chipping, cutting, sawing, filling, shearing, hammering etc.</li> <li>Escalate all issues related to change in color, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output.</li> </ul>	
9	<p><b>Conduct regular cleaning and maintenance of the equipment</b> Theory Duration (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> ASC/N0008</p>	<ul style="list-style-type: none"> <li>Describe relevant standards and procedures followed in the company for the process of maintenance and equipment storage.</li> <li>Describe the procedure for arranging the equipment and spare parts in the prescribed manner including tagging and numbering of machine parts &amp; spares.</li> <li>Prepare periodic log sheets of equipment maintenance dates, maintenance schedules and maintenance activity conducted on the equipment.</li> <li>Label/tag process related equipment parts/ spare parts clearly as per part number or serial number so that sorting of equipment becomes easy.</li> <li>Explain basic level maintenance and cleaning techniques.</li> <li>Identify various solvents, chemicals, lubricants etc. used during the maintenance processes.</li> <li>Describe the safety precautions to be taken during cleaning and maintenance activities.</li> <li>Arrange all equipment in a proper order as indicated in the equipment manual.</li> <li>Perform proper storage of the equipment auxiliaries and spare parts as per the guidelines.</li> <li>Cover the equipment so that there is limited contact with dust and moisture.</li> <li>Clean the working area under the process regularly to create a healthy, clean and safe working environment.</li> <li>Clean the equipment and process auxiliaries regularly to remove any dust, moisture, waste material which would have got collected on the equipment.</li> <li>Clean the internal parts of the equipment regularly by opening the equipment.</li> <li>Check the working of all bearing, rollers, shafts etc. And oil all moving parts of the equipment on a periodic basis.</li> <li>Check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure.</li> <li>Check the equipment calibration periodically and report any errors to the maintenance teams for rectification.</li> </ul>	<p>Training kit (Trainer guide, Presentations), maintenance and cleaning equipment, solvents, chemicals, lubricants etc. used during the maintenance processes, equipment and process auxiliaries, bearing, rollers, shafts etc., personal protective equipment (PPE).</p>

<p>10</p>	<p><b>Store the finished goods in the designated area</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> ASC/N3106</p>	<ul style="list-style-type: none"> <li>• Explain basic level operations of lifting equipment like hoists, cranes, pulley etc.</li> <li>• Identify the output product shape and decide the mechanism to lift the output.</li> <li>• Clamp the product and lift the output object using suitable equipment like hoist, lifts, crane etc.</li> <li>• Ensure that there is no damage to the lifted work pieces.</li> <li>• Describe methods of storage and tagging of final product.</li> <li>• Carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.</li> <li>• Tag the right quality pieces for future identification, post inspection.</li> <li>• Carry the tagged pieces to the storage areas using manual/automatic means.</li> <li>• Record the number of finished goods along with the storage identification numbers for easy sorting.</li> </ul>	<p>Training kit (Trainer guide, Presentations), lifting equipment like hoists, cranes, pulley, hangars, conveyor belts, cranes, forklifts etc., storage requirement and tagging equipment, personal protective equipment (PPE).</p>
<p>11</p>	<p><b>Maintain a healthy, safe and secure working environment</b></p> <p><b>Theory Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> ASC/N0006</p>	<ul style="list-style-type: none"> <li>• Identify potential hazards at the work site while engaging in a maintenance activity and take appropriate action.</li> <li>• Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise.</li> <li>• Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc.</li> <li>• Inform the concerned authorities about damages which can potentially harm man/ machine during operations.</li> <li>• Create awareness amongst others by sharing information on the identified risks.</li> <li>• follow the instructions given on the equipment manual describing the operating process of the equipment.</li> <li>• Describe the relevant standards, procedures and policies related to health, safety and environment followed in the company.</li> <li>• Describe the safety procedures (firefighting, first aid) to be followed within the organization.</li> <li>• Follow the safety, health and environment related practices developed by the organization.</li> </ul>	<p>Training kit (Trainer guide, Presentations), first aid kit, different types of fire extinguishers, Personal Protective Equipment (PPE).</p>

		<ul style="list-style-type: none"> <li>Describe the various types of PPE and their usage.</li> <li>Operate the machine using the recommended Personal Protective Equipment (PPE).</li> <li>Describe the risks associated with each occupation in the organisation.</li> <li>Maintain a clean and safe working environment near the workplace and ensure there is no spillage of chemicals, production waste, oil, solvents etc.</li> <li>Describe the role of an individual in creating a highly safe and clean working environment.</li> <li>Ensure that the waste disposal takes place in the designated area as per organization SOP.</li> <li>Inform the medical officer/ HR using organisational procedures in case of self or an employee's illness of contagious nature so that preventive actions can be planned for others.</li> </ul>	
12	<p><b>Maintain 5S at work premises</b></p> <p><b>Theory Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> ASC/N0021</p>	<ul style="list-style-type: none"> <li>Ensure the work area, tools, equipment and materials are clean.</li> <li>Store cleaning material and equipment in the correct location and in good condition.</li> <li>Ensure cleanliness of self and the workplace.</li> <li>Follow daily cleaning schedules according to organization standards.</li> <li>Sort materials, tools, equipment, spare parts and place them in their designated storage area.</li> <li>Follow proper labelling procedures.</li> <li>Follow proper storage procedures.</li> <li>Explain the importance of waste disposal.</li> <li>Carry out segregation of waste into hazardous and non-hazardous waste and dispose the waste as per SOP.</li> <li>Follow the floor markings/ area markings used for demarcating the various sections in the plant.</li> <li>Follow 5S guidelines at the workplace.</li> </ul>	<p>Training Kit (Presentations, Trainer Guide) materials, tools, equipment, spare parts, personal protective equipment (PPE).</p>
	<p><b>Total Duration</b> <b>300:00</b></p> <p><b>Theory Duration</b> <b>100:00</b></p> <p><b>Practical Duration</b> <b>200:00</b></p>	<p><b>Unique equipment required:</b> Training Kit (Presentations, Trainer Guide), Generator, Inverter of suitable capacity, Spot, Projection and Butt welding apparatus, Resistance welding apparatus, MIG/MAG welding apparatus, TIG welding apparatus, personal protective equipment (PPE), electrodes, welding gun, welding machine auxiliaries (Welding Transformer, Gas Discharge unit, Flux wire) for various types of welding, cleaning and maintenance equipment, chippers, grinders etc., materials, tools, equipment, spare parts, lifting equipment like hoists, cranes, pulley, hangars, conveyor belts, cranes, forklifts etc., storage requirement and tagging equipment, maintenance and cleaning equipment, solvents,</p>	



		chemicals, lubricants etc. used during the maintenance processes, equipment and process auxiliaries, bearing, rollers, shafts etc., inspection and quality management tools, such as measurement instruments like rulers, Vernier calipers, micrometer, weighing scale, gauges and other inspection equipment, cutting, shearing, hammering, drilling tools, Welding apparatus, of core welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units, Welding Gun, Filler material/ Gas discharge, destructive and non-destructive test kit apparatus, First Aid Kit, Different types of Fire Extinguishers.	
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Grand Total Course Duration: **300 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Automotive Skill Development Council](#))

## Trainer Prerequisites for Job role: “Welding Technician Level 3” mapped to Qualification Pack: “ASC/Q3102, v1.0”

Sr. No.	Area	Details
1	<b>Description</b>	A Trainer for <u>“Welding Technician Level 3”</u> trains candidates for supporting the Welder/ Operator in joining various types of metallic frames, structures, jigs, plates, sheets etc using heating and melting process created through electrical power and gaseous discharge.
2	<b>Personal Attributes</b>	The Trainer for Welding technician Level 3 requires reading, writing and communication skills, ability to plan and prioritize, quality consciousness, safety orientation, Dexterity, high precision and sensitivity to problem solving.
3	<b>Minimum Educational Qualifications</b>	Degree/Diploma in Electrical/Automobile/Mechanical Engineering
4a	<b>Domain Certification</b>	Certified for Job Role: <u>“Welding Technician Level 3”</u> mapped to QP: <u>“ASC/Q3102, v1.0”</u> . Minimum accepted score is 80%
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: <u>“Trainer”</u> , mapped to the Qualification Pack: <u>“MEP/Q0102”</u> . Minimum accepted as per respective SSC guidelines is 80%.
5	<b>Experience</b>	<ul style="list-style-type: none"> <li>5-7 years of work experience as a Welding Technician Level 3</li> <li>1-2 years of teaching/training experience is preferred</li> </ul>



Annexure: Assessment Criteria

**Criteria For Assessment Of Trainees**

**Job Role:** Welding Technician Level 3

**Qualification Pack:** ASC/Q3102, v1.0

**Sector Skill Council:** Automotive Skill Development Council

**Guidelines for Assessment**

1. Assessment to be conducted by ASDC as per competency output defined in the NOS/QP and the assessment criteria provided in the NOS/QP.
2. Assessment to be carried out by a third party Assessment Body duly affiliated to the SSC.
3. ASDC assessments will be comprehensive and cover all aspects of acquired knowledge, practical skills and also basic ability to communicate. Accordingly, evaluation process would include:
  - i. Theory/Knowledge test
  - ii. Practical demonstration test
  - iii. Face to Face
4. Theory/Knowledge assessment will be carried out on line through a link provided for each assessment that generates a random paper from a bank of questions available at the back end.
  - On line test would be conducted in the presence of an ASDC assessor till web enabled proctoring is deployed.
5. ASDC assessor would be conducting Practical and Viva as per the criteria provided in the NOS/QP.
6. Cut off criteria for certification (Marks obtained in %):70%

Compulsory NOS				Marks Allocation	
Total Marks: 800					
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out of	Theory	Skills Practical
ASC/N3103 Understand the job requirements and related processes	PC1.understand the work order (work output) required from the process and discuss the same with the operator	100	17	5	12
	PC2.refer all engineering drawings and sketches related to the work output to understand the measurement and shape of the required work output		17	5	12
	PC3.clearly understanding the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions or defined by supervisors		17	5	12
	PC4.refer the queries to the Operator/ Welder if they cannot be resolved by the Assistant Welder on own		17	5	12

	PC5.obtain help or advice from specialist if the problem is outside his/her area of competence or experience		16	5	11
	PC6.confirm self - understanding to the Operator once the query is resolved so that all doubts & queries can be resolved before the actual process execution		16	5	11
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
ASC/N3104 Prepare the welding machine for the welding process	PC1.understand the right welding methodology and process to be adopted for completing the work order from the supervisor	<b>100</b>	8	3	5
	PC2.understand the various welding parameters like temperature, pressure, electrode type, electrode distance (gap), Welding current, voltage, process time etc. before starting the welding process		8	3	5
	PC3.understand the material required and the equipment availability for executing the activity		8	3	5
	PC4.correctly understand the type of electrode in terms of electrode material and thickness, filler material and flux which will be required for the selected welding process before the initiation of the welding process		8	3	5
	PC5.ensure that the required material is procured from the store before starting the welding process		8	2	6
	PC6.along with the helper, clean the surface of the electrodes and the welding gun to remove dust and any other impurities		7	1	6
	PC7.clean other welding machine auxiliaries (Welding Transformer, Gas Discharge unit, Flux wire) before the initiation of the welding process		6	1	5
	PC8.setup the welding apparatus as per the selected welding process and the internal Operating procedures and the setting standards for the machine		11	2	9
	PC9.clean the surface to the metal parts (work pieces) which need to be joint		6	1	5
	PC10.remove any extra material, sharp edges etc. which might impact the final welded product		6	1	5
	PC11.correctly compare the dimensions of the work pieces available on the welding line with the product drawing/ sketches available with the operator		10	2	8

	PC12.in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc.		6	1	5
	PC13.immediately refer the queries to a operator and the supervisor		4	1	3
	PC14.confirm self-understanding to the operator once the query is resolved so that all doubts & queries can be resolved before the actual process execution		4	1	3
		<b>Total</b>	<b>100</b>	<b>25</b>	<b>75</b>
ASC/N3105 Support the welder during the welding process	PC1.hold the parts which need to be welded together using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn	<b>100</b>	9	2	7
	PC2.install the work pieces on the Welding apparatus keeping in mind the electrodes distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work Instructions and instructed by the operator/ welder and the supervisor		11	2	9
	PC3.check for operation of core welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units as per setup documentation		10	2	8
	PC4.support the operator in conducting destructive and non destructive test activity		11	2	9
	PC5.support the operator in the Gas Discharge welding by holding the Welding Gun and the Filler material/ Gas discharge		10	2	8
	PC6.help the welder in monitoring the welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode distance etc.) by observing and communicating the readings on various panels/ meters at the right time to prevent any harm to the work pieces due to overheating, burning, over melting		11	2	9
	PC7.measure the final welded piece and compare the dimensions as prescribed in the work order engineering drawing		10	2	8
	PC8.in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc		10	2	8
	PC9.if there are any bulges, then hammer the bulges and give the work pieces the desired shape		10	2	8

	PC10. keep the operator informed of any inconsistency in the welding process, quality issues etc. so that the same can be dealt immediately		8	2	6
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
ASC/N0007 Conduct quality checks and inspection of the finished products	PC1. measure the specifications of the finished product using devices like micrometer, Vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order	<b>100</b>	13	4	9
	PC2. compare texture, color, surface properties, hardness and strength with the given product specifications		12	4	8
	PC3. note down the observations of the basic inspection process and identify pieces which are OK and also not meeting the specified standards		13	4	9
	PC4. separate the defective pieces into two categories – pieces which can be repaired/ modified and pieces which are beyond repair		13	4	9
	PC5. discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework		12	3	9
	PC6. maintain records of each category of work outputs		12	4	8
	PC7. rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by Fettling, chipping, cutting, sawing, filling, shearing, hammering etc.		12	3	9
	PC8. escalate all issues related to change in color, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output		13	4	9
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
ASC/N0008 Plan and organise work to meet expected outcomes	PC1. arrange all equipment in a proper order as indicated in the equipment manual	<b>100</b>	10	2	8
	PC2. store equipment auxiliaries and spare parts in proper designated areas		10	2	8
	PC3. clearly tag process related equipment parts/ spare parts as per part number or serial number so that sorting of equipment becomes easy		9	2	7
	PC4. cover equipment so that there is limited dust collection and moisture contact		8	1	7

	PC5.regularly clean the equipment and process auxiliaries to remove any dust, moisture, waste material which would have got collected on the equipment		10	2	8
	PC6.regularly open the equipment and clean the internal parts of the equipment		9	2	7
	PC7.Regularly clean the working area under the process and create a healthy, clean and safe working environment		9	2	7
	PC8.check the working of all bearing, rollers, shafts etc. and oil all moving parts of the equipment on a periodic basis		9	2	7
	PC9.check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure		9	2	7
	Pc10.periodically check the equipment calibration and report any errors to the maintenance teams for rectification		9	2	7
	PC11.prepare periodic log sheets of equipment maintenance dates, maintenance schedules and maintenance activity conducted on the equipment		8	1	7
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
ASC/N3106 Remove the finished goods and store them in the designated place	PC1.understand the output product shape and decide the mechanism to lift the output	<b>100</b>	<b>14</b>	3	11
	PC2.clamp the product and lift the output object using suitable equipment like hoist, lifts, crane etc.		<b>15</b>	3	12
	PC3.ensure that there is no damage to the lifted work pieces		<b>14</b>	3	11
	PC4.carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.		<b>15</b>	3	12
	PC5.post inspection process, tag the right quality pieces for future identification		<b>15</b>	3	12
	PC6.carry the tagged pieces to the storage areas using manual/ automatic means		<b>15</b>	3	12
	PC7.keep a record of the finished goods along with the storage identification numbers for easy sorting		<b>12</b>	2	10
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>

ASC/N0006 Maintain a safe and healthy working environment	PC1.identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise	100	9	3	6
	PC2.inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc		8	2	6
	PC3.inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations		8	2	6
	PC4.create awareness amongst other by sharing information on the identified risks		6	1	5
	PC5.follow the instructions given on the equipment manual describing the operating process of the equipment's		10	3	7
	PC6.follow the Safety, Health and Environment related practices developed by the organization		11	3	8
	PC7.operate the machine using the recommended Personal Protective Equipment's (PPE)		11	3	8
	PC8.maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc		10	2	8
	PC9.maintain high standards of personal hygiene at the work place		9	2	7
	PC10.ensure that the waste disposal is done in the designated area and manner as per organization SOP.		11	3	8
	PC11.inform appropriately the medical officer/ HR in case of self or an employee's illness of contagious nature so that preventive actions can be planned for others		7	1	6
	<b>Total</b>	<b>100</b>	<b>25</b>	<b>75</b>	
ASC/N 0021 Maintain 5S at the work premises	PC1.follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces	100	4	1	3
	PC2.ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions		4	1	3

PC3.follow the technique of waste disposal and waste storage in the proper bins as per SOP	4	1	3
PC4.segregate the items which are labelled as red tag items for the process area and keep them in the correct places	4	1	3
PC5.sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions	4	1	3
PC6.ensure that areas of material storage areas are not overflowing	4	1	3
PC7.properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	4	1	3
PC8.return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	4	1	3
PC9.follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	4	1	3
PC10.follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	4	1	3
PC11.check that the items in the respective areas have been identified as broken or damaged	4	1	3
PC12.follow the given instructions and check for labelling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.	4	1	3
PC13.make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions	4	1	3
PC14.check whether safety glasses are clean and in good condition	4	1	3
PC15.keep all outside surfaces of recycling containers are clean	4	1	3



PC16.ensure that the area has floors swept, machinery clean and generally clean. In case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards	4	1	3
PC17.check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	4	1	3
PC18.ensure workbenches and work surfaces are clean and in good condition	4	1	3
PC19.follow the cleaning schedule for the lighting system to ensure proper illumination	4	1	3
PC20.store the cleaning material and equipment in the correct location and in good condition	4	1	3
PC21.ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	4	1	3
PC22.follow the daily cleaning standards and schedules to create a clean working environment	4	1	3
Pc23.attend all training programs for employees on 5 S	2.5	0.5	2
PC24.support the team during the audit of 5 S	4	1	3
PC25.participate actively in employee work groups on 5S and encourage team members for active participation	2.5	0.5	2
PC26.follow the guidelines for What to do and What not to do to build sustainability in 5S as mentioned in the 5S check lists/ work instructions	3	1	2
<b>Total</b>	<b>800</b>	<b>100</b>	<b>75</b>