Model Curriculum

Stainless Steel Fabricator

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Stainless Steel Fabricator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Stainless Steel Fabricator", in the "Capital Goods" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	**Stainless Steel Fabricator**		
Qualification Pack Name & Reference ID. ID	CSC/Q0307, v1.0		
Version No.	1.0	**Version Update Date**	16/12/2019
Pre-requisites to Training	8th Standard passed.		
Training Outcomes	**After completing this programme, participants will be able to:** • Prepare for the fabrication of stainless steel structures. • Cut, shape and form stainless steel workpieces as per specifications. • Join stainless steel structures by applying appropriate welding techniques such as MMAW/SMAW, TIG and MIG. • Apply finishing techniques to the stainless steel structure. • Install the finished stainless steel structure/s. • Apply health and safety practices at the workplace. • Work effectively with others.		

This course encompasses 9 out of 9 National Occupational Standards (NOS) of "Stainless Steel Fabricator" Qualification Pack issued by "Capital Goods Skill Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction to Stainless Steel Fabrication** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 0:00 **Corresponding NOS Code** Bridge module	• Describe the capital goods industry. • Discuss the scope of employment in the 'light engineering goods' and 'process plant machinery' segments of the industry. • Describe the role and responsibilities of a stainless steel fabricator. • List the sequence of operations to be performed as a part of the responsibilities of a stainless steel fabricator.	
2	**Basics of stainless steel** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** CSC/N0310	• Describe the benefits and applications of stainless steel. • Describe key features and properties of various types and grades of stainless steel. • List the factors that help in selecting the correct type/grade of stainless steel. • Explain the various standards applicable to stainless steel fabrication. • List the various types of welding techniques used in the fabrication of stainless steel. • List the various tools, materials, machinery and equipment used for stainless steel fabrication.	Various types and grades of stainless steel such as austenitic, duplex, ferritic, martensitic and grades - 200, 300, 400, etc.
3	**Preparing for stainless steel fabrication** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 24:00 **Corresponding NOS Code** CSC/N0310	• Define the various stainless steel cutting processes, which are grinding, abrasive cutting, shearing, laser cutting, plasma cutting, manual cutting, blanking and piercing. • Describe the various types of cutting, shaping and forming equipment and machinery used in stainless steel industry. • List the various design documents used by various types of stainless steel fabricators. • Interpret the relevant symbols and terminologies used in engineering drawings. • Extract information from project documents, design drawings and work instruction notes pertaining to stainless steel fabrication. • List the site and usage related conditions to be considered that could impact the design of the stainless steel structure. • Describe the role of fabrication tolerances in the work process.	Stainless steel samples of various types such as austenitic, duplex, ferritic, martensitic and grade such as 200, 300 and 400; tools, materials, and machinery used in stainless steel fabrication (guillotine shears, swing-type shears for shearing; aluminium oxide discs, rubber-based discs, vitrified/resinous-bonded discs, dedicated discs for

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		• List the key factors to be considered to evaluate the feasibility of the project. • Describe the ways to customize designs as per local conditions and site specifications. • Describe the impact of the local conditions on the welding. • Explain the process of designing a single-angle truss, using T-sections wherever required. • Prepare design layouts listing specifications of materials, parts, measurements, type and grade of stainless steel used. • State the importance of checking the tools, equipment and machinery for non-contamination, usability, strength and rigidity. • Explain the process for removing the contaminants from the tools, equipment and related machinery. • Prepare the documents such as purchase order and bill of materials (BoM). • Describe the various parameters that need to be considered while sourcing material for fabrication of different stainless steel products. • Explain the importance of a quality assurance plan (QAP) • Define the key elements of a QAP • Prepare a QAP	abrasive cutting, cutting fluids, cutting machines for grinding, abrasive cutting, shearing, laser cutting, plasma cutting and manual cutting, CNC machines, handheld machines, cutting wheels, rotary tools, hydraulic shearing machine, upper drive and lower drive mechanical shearing machine, hydraulic bending machine, manual bending machine, pressing machine and stamping machine); project documents, design layouts, drawings, sketches, purchase order, bill of materials, designs, layouts and organisational documents relevant to the work process, guillotine shears, swing-type shears for shearing; aluminium oxide discs, rubber-based discs, vitrified/resinous-bonded discs, dedicated discs for abrasive cutting), cutting fluids and techniques (such as grinding, abrasive cutting, shearing, laser cutting, plasma cutting and manual cutting, CNC machines, handheld machines, cutting

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			wheels, rotary tools, hydraulic shearing machine, upper drive and lower drive mechanical shearing machine, hydraulic bending machine, manual bending machine, pressing machine and stamping machine
4	**Cutting stainless steel workpieces** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 40:00 **Corresponding NOS Code** CSC/N0311	• List the parameters to be followed to achieve a perfect cut. • Describe the steps to be followed while cutting stainless steel workpieces. • Demonstrate the process of cutting the workpiece using appropriate tools, techniques and machinery. • Apply appropriate drill bits for machining and fabrication operations such as turning, facing, hole drilling, threading and tapping. • State the importance of derating the shears. • Demonstrate the process of adjusting the tooth spacing and blade clearance as per the thickness and strength of the material to be cut. • Describe the various precautions to be taken while cutting stainless steel workpieces. • Discuss the impact of overheating during cutting • Demonstrate the process of removing chips and bursts from the workpiece using appropriate tools and techniques	CNC machines for grinding and cutting, handheld machines, cutting wheels, rotary tools, high-speed drill bits, carbide bits, guillotine shears and swing-type shears; hydraulic shearing machine and mechanical shearing machine; aluminium oxide discs, rubber-based discs, vitrified/resinous-bonded discs, dedicated discs; plasma cutting machine; plasma torch, nozzle, amperage machine, fuel gas; nozzles and electrodes; laser cutting machine, AutoCAD, Personal Protective Equipment (PPE), design drawings, stainless steel workpieces, markers, pencils, cutting fluids
5	**Forming the**	• Explain forming and the various methods of	Forming machinery;

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	stainless steel workpiece **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** CSC/N0311	forming used in the process of stainless steel fabrication. • Discuss the method of choosing appropriate forming process for different workpiece. • Explain the importance of selecting the appropriate angle before forming the stainless steel workpiece. • Describe the various types of forming techniques • Demonstrate the bending of stainless steel pipes, sheets and solid sections using appropriate forming machinery • Describe, usage and application of lubricants. • Demonstrate the application of lubricants.	punches, dies, stainless steel metal, hydraulic bending machine, stainless steel sheets/pipes, manual bending machine, pipe, sheet, solid section, hand files, rotating machine, hand tools (such as grinder), lubricants such as emulsifiable chlorinated waxes/oils, wax-based pastes, soluble oils, or soap plus borax; electrical machinery and PPE.
6	**Pre-welding operations** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 40:00 **Corresponding NOS Code** CSC/N0312	• Define various welding techniques such as MMAW/SMAW, TIG and MIG. • Describe the functions of various components and consumables of MMAW/SMAW, TIG and MIG welding equipment. • Demonstrate the process of checking the condition of welding leads, correct handling and storage of gas cylinders, gas connections, earthing arrangement and electrode holder. • Demonstrate the process of cleaning welding equipment such as wire feeder, torch tip and liner. • List the key considerations for selecting a filler rod with required alloy content. • Explain the process of preparing various types of joints • Identify various types of weld defects. • Discuss Welding Procedure Specifications (WPS) and PQR, common weld testing codes, welding parameters, welding positions (EN ISO 6947 – PA, PB, PC, PD, PE, PF, PG; ASME IX – I-6 G/1-6 F) and number and arrangement of runs to fully fill/weld joints etc. • Explain the importance of ensuring that joints are rust free, clean and free from scaling, paint, oil/grease and moisture.	Filler rod, weld metal, stainless steel workpiece, filler metal, stainless steel plate, foreign materials, acetone or a chloride-free cleaner, steel wire brush, stainless steel wool or a chemical solvent; vapour degreaser, tank cleaner, amperage machine, convex weld beads and perfectly cleaned stainless steel workpiece. To include Hand & Handheld Power tools list here

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Demonstrate the use of appropriate material to free the surface of workpieces using chemical/non-chemical cleansers • Describe the various edge preparation techniques used on stainless steel and their importance. • Demonstrate the various edge preparation techniques. • Describe the functions of work holding devices and their use. • Demonstrate application of work holding devices • Demonstrate the process of tacking. • Describe the use, impact and importance of gas pressure and flow rate in stainless steel welding	
7	**Metal Arc Welding/Shielded Metal Arc Welding** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 48:00 **Corresponding NOS Code** CSC/N0208	• List the equipment and consumables used in Manual Metal Arc Welding (MMAW) • Classify electrodes based on their covering, tensile strength, position and composition. • Explain the impact of polarity, metal composition and thickness on MMAW/SMAW welding process. • Explain various types of joint configurations • List the factors that affect weld quality • Define beads • List the factors that determine weld bead shape • Demonstrate the process for preparing various types of joints using MMAW/SMAW. • Describe the quality parameters of welding equivalent to Level C of ISO 5817. • Describe the characteristics of various types of beads • Explain the various types of distortion, their causes and control methods. • Demonstrate welding of joints using stainless steel sheets of 1.5 mm to 24 mm and different welding positions adhering to Level C of ISO 5817 • Describe various Destructive Techniques (DT) and Non-Destructive Techniques (NDT) for weld joint testing. • Demonstrate visual inspection of the welded area. • Perform DPT to assess fine surface defects not detected by visual inspection. • Use weld gauges to check the dimensional accuracy of the prepared joint. • Demonstrate the use of Destructive Techniques (DT) on weld specimen • Document key findings and observations as required during the work process.	Manual Metal Arc Welding MMAW/ Shielded Metal Arc Welding (SMAW) Welding equipment with all accessories, aprons, welding gloves, respirators, safety shoes, overalls, eye shields/ goggles, hard hat/ helmet, safety harness, power saw, pedestal grinder, tong tester, drying oven, electrodes, wire brush, chipping hammer, Fillet weld gauge, Dye Penetrant Test (DPT) instrument, Friction stir welding (FPT) instrument, Magnetic flux testing (MPT) instrument, Radiography (RT) instrument, Ultrasonic (UT) instrument.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
8	**Metal Inert Gas (MIG) welding** **Theory Duration** (hh:mm) 12:00 **Practical Duration** (hh:mm) 44:00 **Corresponding NOS Code** CSC/N0214	• Explain the methods to achieve pre-heat and post-heat requirements using appropriate tools for welding. • Interpret electrode sizes for joint thicknesses, electrode/filler wire, electrical conditions required (direct [D.C..], electrode polarity (positive, negative), welding current and voltage ranges, methods of arc ignition (scratch, high frequency, lift start), shielding gas (type, flow rate, pre-weld gas flow, post-weld gas flow). • List the key considerations for the control of heat input, interpass/run cleaning/back gouging methods; wiring brushing, removal of excess weld metal and post-weld heat treatment. • Describe the power source characteristics such as volt/ampere graph, flat characteristic, constant voltage output) that could affect the welding process. • Describe the function of induction (principle, effect, fixed, stepped, variable control, return; earth); wire feed control (variable speed motor, direct control of wire feed rate); indirect control of welding current and relay for electrical power. • Describe the relationship between wire feed, speed control and welding current. • Describe the standards applicable for correct welding sequence and deposition techniques. • Describe the importance and principles of gouging and back gouging in MIG welding. • Demonstrate the process of gouging and back gouging. • State the importance of appropriate tack welding size and spacing (in relationship to material thickness). • Explain the steps involved in the fine adjustment of parameters, correct manipulation of the torch, blending in stops/starts, tack welds, angle of the torch, setting of individual parameters like wire feed speed, voltage, gas flow rate, stick-out, etc. • State the purpose and correct use of the anti-spatter compound. • Use welding consumables appropriate to the material and application to DC current types. • Describe the effect of factors such as gun angles and weld bead profiles, electrode extensions stick out, fillet weld electrode extension stick out, gun	Stainless steel workpiece, personal protective equipment (PPE), welding leads, gas connection arrangements, earthing arrangements and electrode holder, thermal chalk, thermocouple; WPS (Welding Procedure Specification) and PQR (Process Qualification Record), electrode/filler wire, shielding gas, inverters, rectifiers and generators, fillet lap joints, tee fillet joints, corner joints, butt joints welding cables, welding guns/torches, nozzles, gas purge control, ancillary equipment, chamfering machine jigs and fixtures; clamps and weights/blocks handle, neck, trigger, hose package, shielding gas nozzle, contact tip and tip fixture, insulator, wire guide tube (liner), shielding gas supply lead and manual gas shielded arc welding torch. , argon, helium, helium/argon mixtures,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		travel speed, current and voltage in determining weld bead shape. • Demonstrate the process for checking the weld surface for cracks, porosity, pronounced hump or crater, shrinkage cavity, trapped slag and arcing or chipping marks. • Demonstrate the process for checking the fillet welds to ensure that they are equal in leg length, slightly convex in profile, adequately fused, and there are minimal undercut, overlap and surface inclusions. • Demonstrate the process for checking the weld contour to ensure it has a linear and uniform profile, smooth and free from excessive undulations, regular and has an even ripple formation. • State the purpose and importance of post-heating in welding.	cylinders, manifold systems, regulators, gas flow meters, solenoid valves regulators and flow meters; wire electrodes, wires and rods for arc welding; shielding gases; welding spools and drum packs; anti-spatter compound fillet welds, WPS (Welding Procedure Specification) and PQR (Process Qualification Record) for MIG welding and MIG welded joints.
9	**Basic Tungsten Inert Gas Welding (TIG)** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 30:00 **Corresponding NOS Code** CSC/N0212	• List the equipment and consumables used in Tungsten Inert Gas Welding (TIG) • Explain the factors to be considered during TIG welding. • State the purpose of using a suitable shielding gas based on the base metal in TIG welding. • Explain the process and importance of purging in the welding process. • Describe the quality parameters of welding equivalent to Level B of ISO 5817. • Demonstrate the process for connecting the flow meters and adjusting the flow rate as required during welding. • Identify possible welding defects and take corrective actions. • Demonstrate TIG welding on the stainless steel workpiece while ensuring adherence to safe working practices and Level B of ISO 5817.	Transformer, rectifier, inverter, generator, multimeter, voltmeter, welding torch, electrode, filler wire return clamp, jigs and fixtures, ceramic nozzle, collet, collet holder, gas lens, bakelite cap, Wire brushes, linishers, hammer, power saw, Angle grinders- pedestal and straight, chisel etc., leather gloves; leather apron; welding screen - helmet type; hand screen welding; safety shoes, centre punch, divider, caliper outside, steel rule, ball pen hammer, chipping hammer.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
10	**Post-Welding Checks** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 12:00 **Corresponding NOS Code** CSC/N0214	• Demonstrate the process followed for checking the quality, dimensional and geometrical aspects of the weld to ensure they are as per the specifications. • Explain the various procedures for visual examination of the welds for cracks. • Demonstrate the process for inspecting the welds using visual techniques, while considering the distance of observation, angle of observation, adequate lighting, low powered magnification and fillet weld gauges. • Detect surface imperfections and deal with them appropriately. • Carry out DPT tests to assess fine defects that are not detected by visual inspection (VT). • Perform non-destructive tests such as dye penetrant (DPT), fluorescent penetrant (FPT) and magnetic particle (MPT) to evaluate the quality of welds.	Welded stainless steel workpiece welded joint fillet weld gauges defective welded workpiece chemicals for cleaning weld specimens and welding equipment.
11	**Finishing and installation** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 40:00 **Corresponding NOS Code** CSC/N0313	• List the various site limitations that could affect the erection and installation process for stainless steel structure. • Explain the procedure followed for finishing and installing the fabricated stainless steel structures. • Assemble the fabricated stainless steel structure/s and related components. • Apply quality assurance plan (QAP) to evaluate the quality of welded and finished structures. • Demonstrate the use of stainless steel wires for brushing to remove the discolouration from the weld areas. • Demonstrate the use of flapper wheel abrasives for deburring and finishing the fabricated structures. • Describe the water chilling methodology for welding of stainless steel. • Demonstrate the process of cleaning the weld surface using mechanical, chemical and other standard cleaning methods. • Demonstrate the procedure to inspect the weldments for welding imperfections after welding. • Conduct chisel/shear test, load test to test the weldments and their tensile strength. • Perform buffing using appropriate materials to smoothen the surface of the stainless steel workpiece. • Explain the guidelines to be followed for handling,	Fabricated components, design drawings and specification sheets; welded joints, stainless steel wires, flapper wheel abrasives, cartridge rolls, cross pads, drum sleeves and flap discs; acetone, methylated spirit, grinders, glass beads, copper slags, stainless steel cut wire weldments, fibre wheel, jute wheel, cloth wheel, flap wheel, chisel scaler; soaps such as wax/cleaning soap, cutting soap; grinding and polishing equipment; templates, manufacturer

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		storing, packing and transporting stainless steel. • Operate appropriate grinding and polishing equipment to achieve the required level of finishing such as mirror finish and hairline finish on the surface of the workpiece. • State the role of manufacturer instructions in the work process. • Mark on the fabricated structure using the recommended templates. • Demonstrate the process of coating the fabricated stainless steel surface. • Demonstrate the use of tools and equipment in aligning and levelling the fabricated structure accurately. • Explain the guidelines to be followed for the upkeep of the stainless steel structure/s.	documents pertaining to installation stainless steel; parts and structures; welding and drilling equipment and personal protective equipment (PPE) such as goggles, nose masks, face masks, earplug, helmet (as applicable), safety shoes, hand gloves, leather gloves (welding), rubber gloves (pickling) and apron (sandblasting).
12	**Health and safety** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 12:00 **Corresponding NOS Code** CSC/N1335	• Explain the importance of Personal Protective Equipment (PPE). • Identify appropriate PPE for the various tasks performed. • Identify job site risks and hazards to avoid accidents in the workplace. • Identify the names and locations of people responsible for health and safety in the workplace. • Identify documents that refer to health and safety in the workplace and where they are located. • Demonstrate safe working practices to ensure the safety of self and others. • Demonstrate the inspection, setting up and safe use of steps and ladders. • Demonstrate safe work practices in and around trenches, elevated places and confined areas. • Demonstrate the correct procedures for lifting heavy objects. • Demonstrate good housekeeping practices. • Identify common hazard signs displayed in various areas in a manufacturing unit.	Leather gloves, leather apron, welding screen – helmet types, hand screen welding and safety shoes.
13	**Fire Safety** **Theory Duration** (hh:mm) 02:00	• Identify causes of fire accidents. • Recognise required fire extinguisher based on the type of fire. • Use the various appropriate fire extinguishers on different types of fires correctly. • Interpret fire safety signs.	Class A, B, C and D fire extinguishers.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 10:00 **Corresponding NOS Code** CSC/N1335	• Inspect evacuation plan in case of fire. • Identify the location of assembly point, fire exit and fire alarm. • Follow reporting procedure in case of a fire. • Participate in fire safety drills at the workplace. • Demonstrate good housekeeping in order to prevent fire hazards.	
14	**Emergencies, rescue and first aid procedure** **Theory Duration** (hh:mm) 02:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CSC/N1335	• Follow electrical safety procedures. • Use approved methods to rescue a person from electrocution. • State the importance of first aid. • Identify the contents of a first aid kit. • Administer first aid in case of minor injuries, bleeding, burns, choking, electrical shock, poisoning, etc. • Demonstrate the artificial respiration and CPR process. • Follow correct methods to move injured people and others during an emergency. • Explain stages of crisis and crisis management. • Demonstrate emergency procedures as per role. • Prepare an accident/incident report or dictate a report to another person and send the report to the person responsible.	First aid kit with all contents.
15	**Working effectively with others** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 30:00 **Corresponding NOS Code** CSC/N1336	• State various categories of people that one is required to communicate and coordinate within the organization. • Explain the importance of effective communication in the workplace. • Explain the importance of teamwork in organizational and individual success. • Describe various components of effective communication and active listening. • Describe the barriers to effective communication. • Demonstrate clear and correctly paced communication of information in a manner that helps others to understand. • Explain the importance of working with colleagues in a positive and helpful manner, where required and possible. • Demonstrate measures taken to maximize effectiveness and efficiency in carrying out tasks. • Demonstrate appropriate communication etiquette at common work situations. • Demonstrate the application of active listening	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		skills while interacting with others at common work situations. • Explain the importance of ethics and discipline for professional success. • Describe common reasons for interpersonal conflict and ways of managing interpersonal conflict effectively. • Explain the importance of developing effective working relationships for professional success. • Display responsible and disciplined behaviours at the workplace. • Demonstrate how to communicate the work instructions to the team. • Describe problems that are beyond one's scope and how to respond to them. • State common procedures in organisations for escalation of grievances and problems.	
	Total Duration 500:00 **Theory Duration 140:00** **Practical Duration 360:00**	**Unique Equipment Required:** First aid kit with all contents; Class A, B, C and D fire extinguishers, fabricated components, design drawings and specification sheets; welded joints, stainless steel wires, flapper wheel abrasives, cartridge rolls, cross pads, drum sleeves and flap discs; acetone, methylated spirit, grinders, glass beads, copper slags, stainless steel cut wire, weldments, fibre wheel, jute wheel, cloth wheel, flap wheel, chisel scaler; soaps such as wax/cleaning soap, cutting soap; grinding and polishing equipment; templates, manufacturer documents pertaining to installation stainless steel; parts and structures; welding and drilling equipment and personal protective equipment (PPE) such as goggles, nose masks, face masks, earplug, helmet (as applicable), safety shoes, hand gloves, leather gloves (welding), rubber gloves (pickling) and apron (sand blasting), welded stainless steel workpiece, welded joint, fillet weld gauges, defective welded workpiece, chemicals for cleaning weld specimens and welding equipment, argon, helium, helium/argon mixtures, cylinders, manifold systems, regulators, gas flow meters, solenoid valves, regulators and flow meters; wire electrodes, wires and rods for arc welding; shielding gases; welding spools and drum packs; anti-spatter compound, fillet welds, WPS (Welding Procedure Specification) and PQR (Process Qualification Record) for MIG welding and MIG welded joints; transformer, rectifier, inverter, generator, multimeter, voltmeter, welding torch, electrode, filler wire, return clamp, jigs and fixtures, ceramic nozzle, collet, collet holder, gas lens, bakelite cap, Wire brushes, linishers, hammer, power saw, Angle grinders- pedestal and straight, chisel etc., leather gloves; leather apron; welding screen - helmet type; hand screen welding; safety shoes, centre punch, divider, caliper outside, steel rule, ball pen hammer, chipping hammer, welding leads, gas connection arrangements, earthing arrangements and electrode holder, thermal chalk, thermocouple; fillet lap joints, tee fillet joints, corner joints, butt joints, welding cables, welding guns/torches, nozzles, gas purge control, ancillary equipment, chamfering	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		machine, jigs and fixtures; clamps and weights/blocks, handle, neck, trigger, hose package, shielding gas nozzle, contact tip and tip fixture, insulator, wire guide tube (liner), shielding gas supply lead and manual gas shielded arc welding torch, Manual Metal Arc Welding MMAW/ Shielded Metal Arc Welding (SMAW) Welding equipment with all accessories, chipping hammer, Fillet weld gauge, Dye Penetrant Test (DPT) instrument, Friction stir welding (FPT) instrument, Magnetic flux testing (MPT) instrument, Radiography (RT) instrument, Ultrasonic (UT) instrument, filler rod, weld metal, stainless steel workpiece, filler metal, stainless steel plate, foreign materials, acetone or a chloride free cleaner, steel wire brush, stainless steel wool or a chemical solvent; vapour degreaser, tank cleaner, amperage machine, convex weld beads and perfectly cleaned stainless steel workpiece; forming machinery; punches, dies, stainless steel metal, hydraulic bending machine, stainless steel sheets/pipes, manual bending machine, pipe, sheet, solid section, hand files, rotating machine, hand tools (such as grinder); lubricants such as emulsifiable chlorinated waxes/oils, wax based pastes, soluble oils, or soap plus borax; electrical machinery; abrasive cutters, laser cutting machine, plasma cutting machine and manual cutting machine; marker, pencil, cutting fluids, CNC machines, handheld machines, cutting wheels, rotary tools, high-speed drill bits, carbide bits, guillotine shears and swing-type shears; hydraulic shearing machine and mechanical shearing machine; aluminium oxide discs, rubber-based discs, vitrified/resinous-bonded discs, dedicated discs; plasma torch, nozzle, amperage machine, fuel gas; AutoCAD software for laser cutting; purchase order, bill of materials, designs, layouts and organisational documents relevant to the work process; stainless steel as per types such as austenitic, duplex, ferritic, martensitic and grade such as 200, 300 and 400; tools, materials, and machinery used in stainless steel fabrication; project documents, design layouts, drawings and sketches. **Classroom Aids:** LCD, Projector, whiteboard, markers, stationary (chartpaper, sketchpens, sticking tape) Facilitator's Guide, Participant's handbooks, Presentations, etc.	

Grand Total Course Duration: **500 Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by **Capital Goods Skill Council).***

Trainer Prerequisites for Job role: "Stainless Steel Fabricator" mapped to Qualification Pack: "CSC/Q0307 v1.0".

Sr. No.	Area	Details
1	**Description**	The Trainer trains the learner to perform tasks such as planning and preparing for stainless steel fabrication, cutting and forming, pre-welding operations, welding (SMAW, TIG, MIG), finishing and installing the fabricated stainless steel structures. Also, the trainer trains the learner on adhering to health and safety practices and working effectively at the workplace.
2	**Personal Attributes**	Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organise own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness.
3	**Minimum Educational Qualifications**	Minimum - Diploma/Degree in Mechanical Engineering.
4a	**Domain Certification**	Certified for Job Role: "Stainless Steel Fabricator" mapped to QP: "CSC/Q0307, v1.0". Minimum accepted score is 80%.
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score as per MEPSC guidelines is 70%.
5	**Experience**	• Minimum 3 to 4 years of industry experience in relevant job role and a • Minimum of 3 to 4 years and Training experience in relevant job role.

Annexure: Assessment Criteria

Criteria For Assessment Of Trainees

For the Assessment Criteria, please refer to the QP PDF.