

Model Curriculum

Electroplating Operator

SECTOR: CAPITAL GOODS
SUB-SECTOR: 1. Machine Tools
2. Plastics Manufacturing Machinery
3. Textile Manufacturing Machinery
4. Process Plant Machinery
5. Electrical and Power Machinery
6. Light Engineering Goods
OCCUPATION: Coating and Painting
REF ID: CSC/Q0701, v1.0
NSQF LEVEL: 2



Skill India
कौशल भारत - कुशल भारत



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

CAPITAL GOODS SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of

Job Role/ Qualification Pack: 'Electroplating Operator' OP No. 'CSC/Q 0701, NSQF Level 2'

Date of Issuance: Nov 24th, 2017

Valid up to : Nov 24th, 2021

**Valid up to the next review date of the Qualification Pack or the
'Valid up to' date mentioned above (whichever is earlier)*



Authorised Signatory
(Capital Goods Skill Council)

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Electroplating Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Electroplating Operator”, in the “Capital Goods” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Electroplating Operator		
Qualification Pack Name & Reference ID. ID	CSC/Q0701, v1.0		
Version No.	1.0	Version Update Date	24/11/2017
Pre-requisites to Training	10 th Standard Pass		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Perform electroplating operations on ferrous and non-ferrous metals and alloys • Apply basic health and safety practices at the workplace • Work effectively with others 		

This course encompasses 3 out of 3 National Occupational Standards (NOS) of “Electroplating Operator” Qualification Pack issued by “Capital Goods Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Electroplating operations on ferrous and non –ferrous metals and alloys</p> <p>Theory Duration (hh:mm) 40:00</p> <p>Practical Duration (hh:mm) 100:00</p> <p>Corresponding NOS Code CSC/N0701</p>	<ul style="list-style-type: none"> • State the need for electroplating • Explain the process of electroplating • Describe the parameters determining the final quality of the component • Use metric system of measurement • Explain the use of various treatment baths • List the materials suitable for electroplating • List various chemicals and salts used in the electroplating and their suitability • Explain various pre-treatment activities • Explain critical settings and instruments used for this purpose • Identify hazards associated with electroplating operations to avoid accidents at the work place • Identify Personal Protective Equipment (PPE) • Extract information from the job specifications and electroplating requirements • Prepare the equipment for the electroplating • Verify the calibration status of measuring instruments • Prepare the solution for electroplating • Perform pre-treatment activities • Position and fix the component using appropriate holding device • Load components safely into the treatment plant/solutions • Set parameters as per the instruction sheet • Check for the final quality of the plate to meet required quality parameters • Observe for any defects by physical inspection • Report unresolved problems to the concerned authority • Dispose of wastes as per the company policy • Follow the recommended procedure to shutdown the equipment correctly • Fill up appropriate technical forms, process logs, activity charts etc. • Convey and share technical information clearly • Interact politely with supervisors and co workers 	<p>Training kit (Trainer guide, PowerPoint), leather aprons, eye protection, overalls, face masks, breathing equipment, various metal samples- steel, copper, brass, cast iron, stainless steel etc., power source, volt meter, AMP meter, temperature recorders/indicators, salt bath, specialised jigs, fixtures etc.</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Plan, prioritize and sequence work operations as per job requirement Manage self and other team members Work in a team to achieve better results 	
2	Health and safety Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code CSC/N1335	<ul style="list-style-type: none"> Explain the importance of Personal Protective Equipment (PPE) Identify job site hazards to avoid accidents at the work place Explain the importance of '5S' at the workplace 	Training kit (Trainer guide, PowerPoint) Leather gloves, leather apron, welding screen – helmet types, hand screen welding and safety shoes
3	Fire Safety Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 30:00 Corresponding NOS Code CSC/N1335	<ul style="list-style-type: none"> Explain types of fires Recognise required fire extinguisher based on the type of fire Apply PASS method to operate a fire extinguisher Interpret fire safety signs Describe safe evacuation method in case of a fire Identify the location of assembly point, fire exit, fire alarm Follow reporting procedure in case of a fire 	Training kit (Trainer guide, PowerPoint) Class A, B, C, D and K fire extinguishers
4	Emergencies, rescue and first aid procedure Theory Duration (hh:mm) 09:00 Practical Duration (hh:mm) 18:00 Corresponding NOS Code CSC/N1335	<ul style="list-style-type: none"> Follow electrical safety procedures Use approved method 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 bleeding, burns, choking, electrical shock, poisoning, etc. Demonstrate CPR process Provide first aid for minor injuries Explain stages of crisis and crisis management Prepare an Incident report as per guidelines 	Training kit (Trainer guide, PowerPoint) First aid kit with all contents
5	Working effectively with others	<ul style="list-style-type: none"> Explain the importance of team work and team dynamics State 4Cs of working in a team 	Training kit (Trainer guide, PowerPoint)

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 60:00</p> <p>Corresponding NOS Code CSC/N1336</p>	<ul style="list-style-type: none"> • Explain types of communication • Apply effective communication technique • Overcome barriers to effective communication • Demonstrate active listening skills • Demonstrate good customer service skills • Explain the importance of ethical behaviour in your day-to-day work • State the importance of discipline in life and apply the same at workplace 	
	<p>Total Duration</p> <p>Theory Duration 84:00</p> <p>Practical Duration 216:00</p>	<p>Unique Equipment Required: Leather aprons, eye protection, overalls, face masks, breathing equipment, various metal samples-steel, copper, brass, cast iron, stainless steel etc., power source, volt meter, AMP meter, temperature recorders/indicators, salt bath, specialised jigs, fixtures etc., Class A, B, C, D and K fire extinguishers, PPE, First aid kit with all contents</p>	

Grand Total Course Duration: **300 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Capital Goods Skill Council](#))

Trainer Prerequisites for Job role: “Electroplating Operator” mapped to Qualification Pack: “CSC/Q0701 v1.0”

Sr. No.	Area	Details
1	Description	Perform a range of electroplating operations on ferrous and non-ferrous metals and alloys.
2	Personal Attributes	Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize 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	Diploma /Degree in Mechanical Engineering
4a	Domain Certification	Certified for Job Role: “Electroplating Operator” mapped to QP: “CSC/Q0701, 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/Q0102”. Minimum accepted as per respective SSC guidelines is 80%.
5	Experience	<ul style="list-style-type: none"> • 3-4 years of industry experience in the relevant field • 3-4 years of teaching experience

Annexure: Assessment Criteria

Criteria For Assessment of Trainees

Job Role: Electroplating Operator

Qualification Pack: CSC/Q0701

Sector Skill Council: Capital Goods Skill Council

Guidelines for Assessment

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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Total Marks: 300		Compulsory	NOS	Marks Allocation	
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out of	Theory	Skills Practical
CSC/N0701 Perform electroplating operations on ferrous and non-ferrous metals and alloys	PC1.comply with health and safety, environmental and other relevant regulations and guidelines at work and ensure process compliance	100	3	1	2
	PC2.adhere to procedures or systems in place for risk assessment, occupational standards, personal protective equipment (PPE) and other relevant occupational safety regulations		4	1	3
	PC3.work following laid down procedures and instructions		3	1	2
	PC4.ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition and are kept at secured location		2	0	2
	PC5.ensure work area is clean and safe from hazards before and after the job is completed		2	0	2

PC6.identify the electroplating requirements from various job specifications documents	2	0	2
PC7.follow job instructions and electroplating specifications, requirements and procedures at all times	3	1	2
PC8.carry out handling/jigging of the component	3	0	3
PC9.check that the equipment is ready for the heat treatment operations being performed	3	0	3
PC10.ensure that the equipment is correctly prepared for the electroplating operations being performed	2	0	2
PC11.identify the materials and required electroplating treatment	2	0	2
PC12.check materials and racking arrangement for non-conformance to specifications/job requirements	4	1	3
PC13.check all equipment relevant to process for compliance with safety and operational requirements	3	1	2
PC14.check if the instrumentation/gauges are ready for operation	2	0	2
PC15.prepare the solution as required by the process	3	0	3
PC16.prepare the work surfaces of the components for electroplating by carrying out the appropriate treatment	3	0	3
PC17.check that the surface treatment equipment and solutions are set up and maintained at satisfactory operating conditions and levels	3	0	3
PC18.check that the components are correctly prepared for the required treatment activities (eg. dry at the correct temperature, correctly masked)	4	1	3
PC19.position and fix the location of the component using an appropriate method as per availability	4	1	3
PC20.load components safely into the treatment plant/solutions	3	0	3
PC21.monitor and adjust settings such as voltage, current and temperature within permissible limits	5	2	3
PC22.ensure that components are left for the required induction period	2	0	2
PC23.remove the components from the plant/solution safely and correctly	3	0	3
PC24.apply appropriate post treatment activities Post-treatment activities: curing, cooling, quenching	4	0	4

	PC25.check that the finished surface achieves the required characteristics and meets the treatment specification		6	2	4
	PC26.carry out quenching/cooling of the components, using the appropriate medium and technique		5	1	4
	PC27.carry out visual inspection and physical examination of the electroplated component if it is as per specification and without defects		5	1	4
	PC28.deal promptly and effectively with problems within control, and seek help and guidance from the relevant people for problems that cannot be resolved		3	0	3
	PC29.shut down the electroplating equipment to a safe condition on completion of the activities		2	0	2
	PC30.clean all tools and equipment on completion of the electroplating activities		2	0	2
	PC31.dispose of waste and excess materials in line with agreed organizational procedures		3	1	2
	PC32.leave the work area in a safe and tidy condition on completion of the fitting activities		2	0	2
		Total	100	15	85
CSC/N1335 Use basic health and safety practices at the workplace	PC1.use protective clothing/equipment for specific tasks and work conditions	100	4	1	3
	PC2.state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3.state the names and location of documents that refer to health and safety in the workplace		3	1	2
	PC4.identify job-site hazardous work and state possible causes of risk or accident in the workplace		5	2	3
	PC5.carry out safe working practices while dealing with hazards to ensure the safety of self and others		4	2	2
	PC6.state methods of accident prevention in the work environment of the job role		3	2	1
	PC7.state location of general health and safety equipment in the workplace		5	2	3
	PC8.inspect for faults, set up and safely use steps and ladders in general use		5	2	3
	PC9.work safely in and around trenches, elevated places and confined areas		5	2	3
	PC10.lift heavy objects safely using correct procedures		4	2	2
	PC11.apply good housekeeping practices at all times		5	2	3
	PC12.identify common hazard signs displayed in various areas		3	1	2

	PC13.retrieve and/or point out documents that refer to health and safety in the workplace		4	1	3
	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		4	1	3
	PC17.demonstrate the correct use of a fire extinguisher		4	1	3
	PC18.demonstrate how to free a person from electrocution		4	1	3
	PC19.administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		3	1	2
	PC20.demonstrate basic techniques of bandaging		3	1	2
	PC21.respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		3	1	2
	PC22.perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC23.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
	PC24.demonstrate the artificial respiration and the CPR Process		3	1	2
	PC25.participate in emergency procedures		4	1	3
	PC26.complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
	PC27.demonstrate correct method to move injured people and others during an emergency		4	2	2
		Total	100	36	64
CSC/N1336 Work effectively with others	PC1.receive information accurately and instructions from the supervisor and fellow workers, getting clarification where required	100	10	3	7
	PC2.pass information accurately to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3.give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4.display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7
	PC5.consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7

	PC6.display appropriate communication etiquette while working		10	3	7
	PC7.display active listening skills while interacting with others at work		10	3	7
	PC8.use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	3	7
	PC9.demonstrate responsible and disciplined behaviors at the workplace		10	3	7
	PC10.escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		10	3	7
		Total	100	30	70