APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)

Rubber

Jr. Machine _Operator – CNC Milling of Plastic

Course Code:

☒NAPS ☐Non-NAPS

NSQF Level: 3

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Course Details

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<tr><td rowspan="2">3.</td><td>Apprenticeship Training Duration:
(2 to 4 weeks of BT is embedded in this duration as per the requirement of the establishment)</td><td>Months: 12 month</td></tr>
<tr><td>Remarks</td><td></td></tr>
<tr><td>4.</td><td>Credit</td><td>TBD</td></tr>
<tr><td>5.</td><td>NSQF Level (Mandatory for NAPS)</td><td>3 NSQC Approval Date: 31/03/2022</td></tr>
<tr><td>6.</td><td>Related NSQF aligned qualification details</td><td>
<table>
<tr><th>S. No.</th><th>QP/ Qualification/ NOS Name (As applicable)</th><th>QP/ NOS Code & Version</th><th>NQR Code</th></tr>
<tr><td>1.</td><td>Jr. Machine Operator - CNC Milling of Plastic</td><td>RSC/Q8402_V1</td><td>2022/RUB/RSDC/05756</td></tr>
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<tr><td>7.</td><td>Brief Job Role Description</td><td>The individual at work is responsible for performing milling operation on plastic material using conventional and CNC milling machine as per organizational standards.</td></tr>
<tr><td>8.</td><td>NCO-2015 Code & Occupation (Access the NCO 2015 volumes from: https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget)</td><td>NCO-2015/NIL</td></tr>
<tr><td>9.</td><td>Minimum Eligibility Criteria
(Educational and/ or Technical Qualification)</td><td>8th Class with 1 Year of experience relevant
OR
8th Class (with ITI)
OR
10th Class</td></tr>
<tr><td>10.</td><td>Entry Age for Apprenticeship</td><td>18 years</td></tr>
<tr><td>11.</td><td>Any Licensing Requirements (wherever applicable)</td><td>NA</td></tr>
</table>

12.	**Is the Job Role amenable to Persons with Disability**	☐ **Yes** ☒ **No** **If yes, check the applicable type of Disability** ☐ **Locomotor Disability** ☐ **Leprosy Cured Person** ☐ **Cerebral Palsy** ☐ **Dwarfism** ☐ **Muscular Dystrophy** ☐ **Acid Attack Victims** ☐ **Blindness** ☐ **Low Vision** ☐ **Deaf** ☐ **Hard of Hearing** ☐ **Speech and Language Disability** ☐ **Intellectual Disability** ☐ **Specific Learning Disabilities** ☐ **Autism Spectrum Disorder** ☐ **Mental Illness** ☐ **Multiple Sclerosis** ☐ **Parkinson's Disease** ☐ **Haemophilia** ☐ **Thalassemia** ☐ **Sickle Cell Disease** ☐ **Multiple Disabilities**
		Remarks:
13.	**Submitting Body Details**	**Name:** Rubber, Chemical & Petrochemical Skill Development Council **E-mail ID:** ceo@rcpsdc.in **Contact Number:** 011-41009347- 48
14.	**Certifying Body**	Rubber, Chemical & Petrochemical Skill Development Council
15.	**Employment Avenues/Opportunities**	**Self-Employment**: Trainees can also start their own business and also provide jobs to otherpeople. **Operating CNC milling machine** Jobs Opportunities in private companies: The trainees can get a job in plastic products manufacturing industry.

16.	**Career Progression**	Jr. Machine Operator – CNC Milling of Plastic ◊ Machine Operator – CNC Milling of Plastic - Programmer cum Operator-CNC Milling of Plastic ◊ Manager- CNC workshop
17.	**Trainer's Qualification & Experience:**	Diploma (Any stream in Engineering) with 5 years of industry experience
18.	**Curriculum Creation Date**	21/07/2022
19.	**Curriculum Valid up to Date**	31/03/2025

Module Details

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
1.	**Introduction**	• Discuss the objectives and benefits of the Skill India Mission • Describe the scope of the Rubber, Chemical, and Petrochemical Industry and its sub- sectors • Discuss job role and opportunities for Junior Machine Operator- CNC Milling of Plastic in Plastic Post- Processing sector • List the basic terminology used in Plastic Post-Processing sector	0	0	0	0
2.	**Prepare for milling operations RSC/N8401 Version: 1.0**	• Outline the standard policies, procedures rules & regulations regarding milling machine and SOP to maintain work area • Discuss various sources to obtain job specifications, tools and measuring instruments/gauges • Explain the standard procedure to set up, maintain and inspect milling machine • List different types of cutters used in horizontal and vertical milling machine • Explain the methods of obtaining and interpreting job specifications like blueprints, mechanical drawings, etc. and geometric dimensions and tolerances (GD&T) for milling operation • Discuss the significance of ensuring availability of appropriate tools and measuring instruments/gauges and procedure to handle them • Explain standard procedure of determining the sequence the operations as per job specifications and plan machining as per the work order, blueprints, engineering plans, materials, specifications, orthographic drawings, reference planes, locations of surfaces, and machining parameters	40	60	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Describe the methods of verifying the settings by measuring positions, first-run part, and sample workpieces • List various type of tools used for milling machine operations and job/tool cooling methods • Discuss various milling operations to produce different components of various plastic materials and methods to control the quality of machined products • Explain the standard procedure for operating milling machine in both hand and power modes with safety norms • Describe the methods of performing test run on the machine and various milling operations to produce components as per standards drawing • Explain the standard procedure to inspect finished product for accuracy and carry out corrective action for any deviation from the required specifications • State the significance of leaving the work area and machine in a safe and appropriate condition on completion of the activities and checking and maintaining machinery on daily basis for proper functionality • Outline the importance of the components produced are as per required quality standards and free from burrs and sharp edges • Discuss various types of record to be maintained during milling operation, procedure and complete record of milling machine actions related to production and quality as well as flies of source documents or other information related to data entered • Employ proper techniques to check the work piece for appropriate dimensions and cleanliness				

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Show how to set-up mills by installing and adjusting three- and four-jaw chucks, tools, attachments, collets, bushings, cams, gears, stops, stock pushers cooling mechanisms for job and cutting tool • Demonstrate how to load feed mechanism by lifting stock into position and mount and set the required work holding devices and cutting tools • Apply standard procedure to check safeguard and milling machine for proper functionality and adjust settings of milling machine as per requirement • Apply proper techniques to mount, set and secure the required work holding devices, workpiece, cutting tools and cooling mechanisms and set the machine tool operating parameters to achieve the component specification • Employ proper process to check and ensure that all safety mechanisms and the equipment are in proper place for the • required milling operations • Apply proper practices to use various milling machine accessories and attachments as per requirement includingdust/chip collection mechanisms • Employ suitable practices to deal promptlyand effectively with error messages and equipment faults that are within control and report those that cannot be solved • Apply proper techniques to measure and check that all dimensional and geometricalaspects of the component are as per the specification • Show how to stop milling machine to remove finished workpieces and to change tooling, set-up, workpiece placement, according to required machining sequence • Apply proper methods to monitor the feedrate and speed of machine and the				

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		milling process and make necessary adjustments for settings • Role play on how to report any difficulties/discrepancies that may ariseduring the machine operation to the • authorized person				
3.	**Coordinate and communicate effectively at the workplace RSC/N5610_V1**	• Explain the standard policies on behavioural etiquette, professionalism and gender sensitive service practices at workplace and standard hierarchy and reporting structure • Discuss effective ways of team coordination • List the key helpline numbers • State the significance of listening, responding, trusting, supporting and respecting all colleagues and seniors • Outline the importance of maintaining clarity, honesty and transparency while communicating with the seniors and colleagues as well as seeking clarificationon the information provided by seniors • Discuss the importance of complying with standard policies and procedures for teamwork and respecting the personal and professional space of colleagues and superiors • Role play on how interact with colleaguesand seniors in a polite and professional manner, listen actively to the issues or requirements of colleagues and respond timely and appropriately • Dramatize how to pass on essential information to the colleagues timely andcoordinate with seniors on work-relatedand behavioural feedback • Role play on how to report the status of work in the desired format as per the schedule to seniors and inform about anydeviations or anomalies	40	60	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Dramatize on how to coordinate and support maintenance/engineering teamand environmental health and safety (EHS) team and other department for smooth work process • Role play on how to provide inputs to the • concerned stakeholders for reviewing anddetect non-compliance				
4.	**Carry out housekeeping RSC/N5001_V3**	• Describe what is housekeeping. • Explain the importance of housekeepingin storage area. • List the cleaning equipment and chemicals used for cleaning process. • Identify various safety boards/signsplaced on the shop floor. • Discuss the importance of adequateventilation during cleaning work. • Discuss the importance of monitoring andsupervising the cleaning activities. • Describe what is '5S.' • Define each 'S' and its meaning. • Discuss the necessary precautions to avoid any hazard and accident duringcleaning activities. • Discuss the documents and records needed to be maintained and updatedrelated to cleaning activities done. • Demonstrate how to inspect the area forcleaning purpose. • Apply appropriate ways to check the working condition of cleaning equipment. • Demonstrate the cleaning process of creelroom area and equipment with the specified cleaning aid and chemicals. • Prepare a sample report related to issuesoccur during cleaning activities and for requirement of any additional cleaning atworkarea.	40	60	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Apply appropriate ways to check thatworkarea is cleaned properly after completion of cleaning activities. • Show how to return back the cleaningequipment and material to store aftercompletion of work. • Show how to dispose the waste material properly as per the organisation's policies and environmental regulations.				
5.	**Carry out health and safety RSC/N5007_V3**	• Explain the health and safety requirements in storage facility. • Discuss organisational procedures for health, safety and security and individualrole and responsibilities related to the same. • Describe the ill-effects of improperstorage conditions in storage area. • List the safety arrangement available instorage area. • Outline the requirements of PersonalProtective Equipment (PPE) during storage operations. • State details of common injuries which can occur while working in a storage area. • Recall the constituents of a first aid boxused in industry. • Demonstrate the use of the given Personal Protective Equipment (PPE). • Demonstrate how to handle fire emergencies through a role play. • Demonstrate how to use a multi-purposefire extinguisher on simulated fire. Select the fire extinguisher from the givenfire extinguishers, for the specified fire type and class. • Demonstrate first aid procedure for agiven injury.	30	70	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
6.	**Follow ethical and sustainable practicesat the workplace RSC/N5603_V1**	• Discuss organisational policies for usageof alternate energy source, such as solarenergy, for the site. • Discuss the importance of efficient utilisation of fuels, material, water andenergy/ electricity. • Explain the processes to optimize usageof fuels, material, water and energy/ electricity. • Enlist common practices for conservingelectricity at workplace. • Discuss the significance of greening. • Classify different categories of waste forthe purpose of segregation. • Differentiate between hazardous, recyclable and non-recyclable waste. • Discuss various methods of wastecollection and disposal. • Discuss the importance of completingtasks on time. • Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD). • Discuss gender-based concepts, issues and legislation as well organization standards, guidelines, rights and dutiesof PwD • Discuss the importance of PwD andgender sensitization. • State the importance of following organizational standards and guidelinesrelated to PwD • Employ practices for efficient utilizationof fuels, material, water and energy/ electricity • Apply appropriate ways to prevent soilerosion during plantation and other related activities. • Demonstrate proper waste collectionand disposal mechanism	40	60	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		depending upon types of waste. • Apply appropriate ways to organisestorage of recyclable and reusable material at identified location. • Employ different means and methods ofcommunication depending upon the requirement to interact with the team members. Demonstrate how to communicate withdifferent genders and persons with disability (PwD) in a sensitive manner. • Role play a situation on how to offer helpto people with disability (PwD) if required • at work.				
	Total Marks		**190**	**310**	**50%**	**50%**

Glossary

Term	Description
Sector	Sector is a conglomeration of different business operations
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.

Acronyms

Acronym	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Annexure 1: Tools and Equipment

List of Tools and Equipment

The tools and equipment required are:

Sno	Tool / Equipment Name	Specification (as per batch of 30 trainees)
1	Machine vice, Cutting Tools (Single Point) Both HSS & Carbide Inserts types	1
2	CNC Milling machine	1
3	Hand Tools: Hammer,screw driver set with Multiple heads, Allen key hexagonal ,Twist drills bit,File triangular, Hacksaw adjustable, Spanner set double side, Adjustable spanner, Crimping tools, Calculator,wrenches, pliers, cutters, striking tools, struck or hammeredtools, vises, clamps, snips, saws, drills and knives	4
4	Measuring equipments: Steel Ruler, Micrometer,Vernier Caliper,Radius gauge,Feeler gauge, Hight gauge, Thread gauge, Steel measuring tape, Weighing Balance (1 No.)	4
5	Different Type CNC Controller Like HASS, FANUC, Heidenhain, CNC HASS Simulators	1
6	Class Room equipments: LCD Projector/Screen, Computer, charts, Black / White board & Duster.	1
7	CNC Simulator	1
8	Milling machine	1

9	Personal Protective Equipment: Safety Goggles,Rubber Gloves, Asbestos gloves,Fire Extinguisher,Apron,Helmet,First Aid Box with Medicines	4
10	Raw material: Mild Steel, Stainless Steel, Aluminium, Brass	5

Classroom Aids

The aids required to conduct sessions in the classroom are:

1 Projector
2 Computer/laptops
3 Internet connectivity
4 Whiteboard

Annexure 2: Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records
- If the batch size is more than 30, then there should be 2 Assessors.

Testing Environment: Assessor must:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)

- Question papers created by the SME should be verified by the other subject Matter Experts along with the approval required from SSC
- Questions are mapped with NOS and PC
- Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management Apprenticeship Curriculum: NAPS Jr. Machine Operator – CNC Milling of Plastic Page 20 of 14
- Assessor must be ToA certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos.

Method of verification or validation:

- Surprise visit to the assessment location
- Random audit of the batch
- Random audit of any candidate

Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage and are stored in the Hard Drive

On the Job:

1. Assessment for on the job training to be conducted by the industry partner on the practical competency output defined in the NOS/QP and the assessment criteria.
2. The candidate must score 70% in each module to complete the OJT.
3. Tools of Assessment that can be used are:
   a. Videos of Trainees during OJT should be shared by employer to RCPSDC.
4. Assessment will ensure that the apprentice will be able to:
   a. Work effectively and efficiently as per schedules and timelines while complying with the health and hygiene norms.
   b. Implement safety practices.
   c. Optimize the use of resources to ensure less wastage and maximum conservation.
   d. Communicate effectively and develop interpersonal skills.