

APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)

Rubber

Assistant Operator_Tyre Retreading - Building & Curing

Course Code: C0092200016

☒NAPS ☐Non-NAPS

NSQF Level: 3



Table of Contents

Course Details.....	3
Module Details.....	6
Glossary.....	12
Acronyms.....	12
Annexure1: Tool and Equipment.....	13
List of Tools and Equipment.....	13
Classroom Aids.....	13
Annexure2: Assessment Strategy.....	14

Course Details

1.	Course Name	Assistant Operator_Tyre Retreading - Building & Curing										
2.	Course Code	CO092200016										
3.	Apprenticeship Training Duration: (2 to 4 weeks of BT is embedded in this duration as per the requirement of the establishment)	Months: 12 months										
	Remarks											
4.	Credit	TBD										
5.	NSQF Level (Mandatory for NAPS)	4	NSQC Approval Date: 31 st March 2022									
6.	Related NSQF aligned qualification details	<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>Assistant Operator-Tyre Retreading - Building & Curing</td><td>RSC/Q3502_V3</td><td>2022/RUB/RSDC/05738</td></tr></table>			S. No.	QP/ Qualification/ NOS Name (As applicable)	QP/ NOS Code & Version	NQR Code	1.	Assistant Operator-Tyre Retreading - Building & Curing	RSC/Q3502_V3	2022/RUB/RSDC/05738
S. No.	QP/ Qualification/ NOS Name (As applicable)	QP/ NOS Code & Version	NQR Code									
1.	Assistant Operator-Tyre Retreading - Building & Curing	RSC/Q3502_V3	2022/RUB/RSDC/05738									
7.	Brief Job Role Description	A Tyre Retreading-Building & Curing Operator is responsible for building and curing operation for retreaded tyre using either hot or procured tread cold retreading process and inspect retreaded tyres for any defect, hold defective tyres for review committee for disposition and carry out final finishing of OK tyres.										
8.	NCO-2015 Code & Occupation (Access the NCO 2015 volumes from: https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget)	NCO-2015/NIL										
9.	Minimum Eligibility Criteria (Educational and/ or Technical Qualification)	8th Class (1 Year of relevant experience) OR										

		5th Class (3 years of relevant experience)
10.	Entry Age for Apprenticeship	18 years
11.	Any Licensing Requirements (<i>wherever applicable</i>)	NA
12.	Is the Job Role amenable to Persons with Disability	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, check the applicable type of Disability <div style="display: flex; flex-wrap: wrap;"> <div style="width: 20%;"><input type="checkbox"/> Locomotor Disability</div> <div style="width: 20%;"><input type="checkbox"/> Leprosy Cured Person</div> <div style="width: 20%;"><input type="checkbox"/> Cerebral Palsy</div> <div style="width: 20%;"><input type="checkbox"/> Dwarfism</div> <div style="width: 20%;"><input type="checkbox"/> Muscular Dystrophy</div> <div style="width: 20%;"><input type="checkbox"/> Acid Attack Victims</div> <div style="width: 20%;"><input type="checkbox"/> Blindness</div> <div style="width: 20%;"><input type="checkbox"/> Low Vision</div> <div style="width: 20%;"><input type="checkbox"/> Deaf</div> <div style="width: 20%;"><input type="checkbox"/> Hard of Hearing</div> <div style="width: 20%;"><input type="checkbox"/> Speech and Language Disability</div> <div style="width: 20%;"><input type="checkbox"/> Intellectual Disability</div> <div style="width: 20%;"><input type="checkbox"/> Specific Learning Disabilities</div> <div style="width: 20%;"><input type="checkbox"/> Autism Spectrum Disorder</div> <div style="width: 20%;"><input type="checkbox"/> Mental Illness</div> <div style="width: 20%;"><input type="checkbox"/> Multiple Sclerosis</div> <div style="width: 20%;"><input type="checkbox"/> Parkinson's Disease</div> <div style="width: 20%;"><input type="checkbox"/> Haemophilia</div> <div style="width: 20%;"><input type="checkbox"/> Thalassemia</div> <div style="width: 20%;"><input type="checkbox"/> Sickle Cell Disease</div> <div style="width: 20%;"><input type="checkbox"/> Multiple Disabilities</div> </div>
		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	<p>Self-Employment: Trainees can also start their own business and also provide jobs to other people.</p> <p>Rubber Product Finishing Jobs Opportunities in private companies: The trainees can get a job in a corporate as Assistant Operator_Tyre Retreading - Building & Curing.</p>
16.	Career Progression	<p>Assistant Operator- Tyre Retreading Building and Curing role leads to Tyre Uniformity Operator/ Solid Tyre Moulding Operator/Pre-Post Tyre Moulding Operator level in Tyre Re-treading under Tyre manufacturing process.</p>
17.	Trainer's Qualification & Experience:	<p>ITI/Diploma /Graduate in any engineering stream The trainer should have relevant experience in domain and knowledge on the particular job role and about the relevant equipment and machinery which is used for the job role</p>
18.	Curriculum Creation Date	07/09/2022
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	<ul style="list-style-type: none"> • Describe various stages of development of rubber. • Explain current industrial scenario of rubber and its prospects in future. • State the rubber consumption pattern in different sectors. • List the source of different types of rubber. • Describe usage of rubber for making different products. • Recognise major rubber industrial associations and their functions. • Discuss the history of tyre manufacturing. • Classify the types of tyres used in automobiles. • Identify the rubber products from the given product samples. • Tell the source of rubber for given rubber raw material samples. • Identify the type of tyre from the given set of tyres. 	0	0	0	0
2.	Prepare material, tools and machine for tyre retreading RSC/N3504, v4.0	<ul style="list-style-type: none"> • Interpret the information available in a production plan for the building and curing process. • Explain the operating procedure of tools and equipment required for building and curing process for tyre retreading, such as: stitcher, cross roller, trimmer, curing oven, etc. • State the importance of cleaning process to maintain quality in building and curing process for tyre retreading. • Outline the purpose of different utility equipment, such as: air compressors, boiler, etc. for building and curing process for tyre retreading. • Recognise the Batch number/ Identification details/ Quality approval status against job sheet for input material to be used for the production. • Interpret the production specifications required to set the curing oven parameters. 	60	40	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		<ul style="list-style-type: none"> • Select the tools and equipment required for building and curing process, from the given set of tools for selection. • Demonstrate the tyre setting process on a tyre building machine to build the tyre for retreading. • Select the consumables required for tyre building process, from the given set of consumables for selection. • Demonstrate application of First In First Out (FIFO) in parts handling. 				
3.	Carry out tread preparation, building and curing operations RSC/N3505, v.3.0	<ul style="list-style-type: none"> • Describe the functions and use of tools and equipment required for tyre building for hot tyre retreading. • List the checks to carry out to judge the requirement of tyre building for hot tyre retreading. • Explain the steps of tyre building and curing for hot retreading process. • Outline the importance of oven curing temperature for hot tyre retreading. • Describe the defects which cannot be repaired in a damaged tyre. • Explain the actions to take in case of any abnormality observed during hot tyre retreading process. • Describe the safety measures to be followed during tyre hot retreading process. • Select tread, cushion gum and cement to be used for tyre building by hot retreading method. • Demonstrate the rubber/cement adhesive solution layer application on the buffed carcass surface for tyre retreading. • Demonstrate the deep depth repairing process for tyre retreading. • Demonstrate the end joining process for tyre building. • Select the appropriate mould, from the given set of moulds, as per tyre specification for tyre curing after building process. • Demonstrate the tyre curing process by hot tyre retreading process. 	60	40	50%	50%
4.	Undertake tyre retreading using cold process RSC/N3506, v3.0	<ul style="list-style-type: none"> • Describe the functions and use of tools and equipment required for tyre building for cold tyre retreading. • List the checks to carry out to judge the requirement of tyre building for cold tyre retreading. • Explain the steps of tyre building and curing for cold tyre retreading. 	50	50	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		<ul style="list-style-type: none"> • Outline the importance of oven curing temperature for cold tyre retreading. • Explain the actions to take in case of any abnormality observed during cold tyre retreading. • Describe the safety measures to be followed during cold tyre retreading process. • Select tread, cushion gum and cement to be used for tyre building by cold retreading method. • Select the appropriate rubber envelop, from the given set of envelops, as per tyre specification for tyre curing after building process. • Demonstrate the tyre curing process by cold tyre retreading process. 				
5.	Undertake finishing and inspection of retreaded tyres RSC/N3507, v3.0	<ul style="list-style-type: none"> • List the equipment used for post-tyre curing activities. • Outline the importance of retreaded tyre identification. • Describe the general quality issues occurring in tyre curing process. • Explain the process of disposing tyre building and curing waste. • Recall the safety precautions to be taken during post-tyre retreading activities. • Demonstrate the tyre inspection process after retreaded tyre curing. • Select sample from the produced retreaded tyres for lab testing. • Select the suitable material handling equipment from the given set of equipment, for moving the retreaded tyre in to the retreaded tyre store. • Demonstrate the disposal of the given tyre retreading waste. • Prepare a material identification tag for a retreaded tyre as per the given details. 	50	50	50%	50%
6.	Carry out housekeeping RSC/N5001, v1.0	<ul style="list-style-type: none"> • Describe what is housekeeping. • Explain the importance of housekeeping in tyre retreading process. • List the cleaning equipment and chemicals used for cleaning process. • Describe what is '5S.' • Define each 'S' and its meaning. • Identify the cleaning equipment from the given set of equipment. • Demonstrate the cleaning process of a given tyre retreading building and curing equipment with the specified cleaning aid and chemicals. • Demonstrate the segregation of unwanted material as per 1S principal in the assigned work area. 	40	60	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
7.	Carry out reporting and documentation RSC/N5002, v1.0	<ul style="list-style-type: none"> • Outline the importance of reporting production performance for building and curing process for tyre retreading. • List the information given in a standard production report for building and curing process for tyre retreading. • Recall the documents used during building and curing process for tyre retreading. • Describe the purpose of using work instructions for building and curing process for tyre retreading. • Explain the ways of overcoming general problems encountered in communication at workplace. • Describe the traits of active listening • Demonstrate the production report filling for a given production data of building and curing process for tyre retreading, on a given format. • Demonstrate the filling up of machine maintenance request slip for given machine maintenance issue. 	40	60	50%	50%
8.	Carrying Out Quality Checks RSC/N5003, v1.0	<ul style="list-style-type: none"> • Identify the inspection equipment used for carrying out in-process inspection during building and curing process for tyre retreading. • Describe the process of verification of the calibration status of a testing equipment. • Explain the basic concept of AQL (Acceptable Quality Level) for sample drawing process for product testing. • Identify the defects getting generated during building and curing process, such as: <ul style="list-style-type: none"> - Damage left unrepaired - Poor tyre damage repair - Tread pattern not as per specification in hot tyre retreading process - Tyre tread end joining not proper - Tread adhesion with tyre not proper • Explain the method for checking in-process quality during tyre building and curing. • List the causes of defects in a retreaded tyre and their probable corrective actions. • Select the inspection equipment for carrying out given in-process quality parameters during tyre building and curing process. 	35	65	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		<ul style="list-style-type: none"> • Demonstrate the verification of the calibration status of the given testing equipment. • Draw sample of the material from the given lot to be tested as per the specified AQL. • Demonstrate labelling/ numbering on the given testing samples as per the given specifications. • Conduct visual inspection of the given calendered samples, as per the given visual inspection check sheet. 				
9.	Carry out problem identification and escalation RSC/N5004, v1.0	<ul style="list-style-type: none"> • Describe regular problems encountered during tyre building and curing process, such as: <ul style="list-style-type: none"> - Machine maintenance issue - Raw material non-availability - Manpower non-availability - Quality issue in input raw material - Quality issue in tyre retreaded • Recall the root cause analysis methods available to analyse the problem. • List the wrong practices which may lead to quality issue in retreaded tyre. • List the wrong practices which may lead to poor production performance. • Explain how to deal with common problems during tyre building and curing process. • Explain the process of escalating problem during tyre building and curing process. • Create a fish bone diagram for a given tyre retreading quality problem. • Illustrate the hierarchy for escalating problem of a curing oven. 	45	55	50%	50%
10.	Carry Out Health & Safety RSC/N5007, v1.0	<ul style="list-style-type: none"> • Explain the health and safety requirements for tyre building and curing process. • Describe the ill-effects of ingredients used in a tyre building and curing process. • List the safety arrangement available in a tyre curing oven. • Outline the requirements of Personal Protective Equipment (PPE) during tyre building and curing process. • State details of common injuries which can occur while working in a tyre retreading industry. • Recall the constituents of a first aid box used in a tyre retreading 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-purpose fire extinguisher on simulated fire. 	30	70	50%	50%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		<ul style="list-style-type: none"> • Select the fire extinguisher from the given fire extinguishers, for the specified fire type and class. • Demonstrate first aid procedure for a given injury. 				
11.	Develop Entrepreneurship Skills RSC/N5013, v1.0	<ul style="list-style-type: none"> • Discuss motivation with the help of Maslow's hierarchy of needs. • List the different factors that motivate an entrepreneur. • Discuss the benefits of time management. • Recall basic computer terminology. • Discuss the main applications of MS office. • Discuss the main types of bank accounts. • Differentiate between fixed and variable costs. • Describe different type of business entities used for doing business. • Describe the different types of taxes. • Discuss basic workplace terminology. • Describe the entrepreneurship ecosystem. • Identify the basic parts of a computer. • Prepare a business plan with basic financial information. • Tell the answers for questions related to building and curing process for tyre retreading, in a mock job interview. 	30	70	50%	50%
	Total Marking		440	560		

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	Safety Goggles, Rubber Gloves/Asbestos gloves, Safety Shoes, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines	10
2	Inspection table, lighting arrangement for inspection, tyres for retreading, material handling equipments, cleaning equipment, safety goggle, safety shoes, safety gloves, safety hat, mask, earmuff, first aid box, Fire extinguisher	3
3	tyre samples for retreading	3
4	Pnematic buffing machine	3

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.