Model Curriculum

QP Name: 2/3-WHEELER MECHANIC/TECHNICIAN, V2

QP Code: STC-AUT / 2022 /0404,V2

QP Version: 2.0

NSQF Level: 3

Model Curriculum Version: 2.0

West Bengal State Council of Technical & Vocational Education and Skill Development, Karigari Bhavan, (5th Floor), Plot-B/7, Action Area-III, New Town, Kolkata-700160

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Training Parameters

Sector	Automotive
Sub-Sector	Automobile Vehicle Service
Occupation	2/3 WHEELER MECHANIC/TECHNICIAN
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	
Minimum Educational Qualification and Experience	1. Class 8 pass and pursuing continuous regular schooling, OR 2. Class 8 Pass with 1 year experience, OR 3. Class 8 Pass + ITI, OR 4. Class 10 Pass OR 5. Previous relevant qualification of NSQF Level 2 with 1 yr experience
Pre-Requisite License or Training	
Minimum Job Entry Age	18 Years
Last Reviewed On	
Next Review Date	
Version	2.0
NSQC Approval Date	
Model Curriculum Creation Date	
Model Curriculum Valid Upto Date	
Model Curriculum Version	2.0
Minimum Duration of the Course	390 hours
Maximum Duration of the Course	390 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the participants will be able to:

- Apply safe working practices
- Identify different parts of 2/3 wheeler and demonstrate their uses.
- Differentiate two stroke and four stroke engine
- Identify hand tools, measuring tools along with their uses.
- Troubleshoot any fault of engine system, carburetor and transmission system.
- Troubleshoot and repair the fault of brake and wheel, ignition system, electric system.
- Repair parts like fork, suspension system, steering column, mud guard, lubrication system.
- Repair alternate fuel feed system in 3 wheeler (LPG/CNG)
- Work in real job situation with special emphasis on basic safety and hazards in this domain.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AUT/0404/OC1 Apply Safe Working Practices NOS Version No.: 2.0 NSQF Level: 3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module1: Apply Safe Working Practices	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC2 Identify different parts of 2/3 wheeler and demonstrate their uses. NOS Version No. :2.0 NSQF Level:3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**

Module2: Identify different parts of 2/3 wheeler and demonstrate their uses.	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC3 Differentiate two stroke and four stroke engine NOS Version No.:2.0 NSQF Level: 3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module3: Differentiate two stroke and four stroke engine	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC4 Identify hand tools, measuring tools along with their uses. NOS Version No.:2.0 NSQF Level:3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 4: Identify hand tools, measuring tools along with their uses.	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC5 Troubleshoot any fault of engine system, carburetor and transmission system. NOS Version No.:2.0 NSQF Level: 3	**20:00 Hours**	**40:00 Hours**	**00:00Hours**	**00:00Hours**	**60:00 Hours**
Module 5: Troubleshoot any fault of engine system, carburetor and transmission system.	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
AUT/0404/OC6 Troubleshoot and repair the fault of brake and wheel, ignition system, electric system. NOS Version No.: 2.0 NSQF Level: 3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 6: Troubleshoot and repair the fault of brake and wheel,	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours

ignition system, electric system.					
AUT/0404/OC7 Repair parts like fork, suspension system, steering column, mud guard, lubrication system. NOS Version No.:2.0 NSQF Level: 3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 7: Repair parts like fork, suspension system, steering column, mud guard, lubrication system.	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC8 Repair alternate fuel feed system in 3 wheeler (LPG/CNG) NOS Version No.: 2.0 NSQF Level: 3	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 8: Repair alternate fuel feed system in 3 wheeler (LPG/CNG)	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AUT/0404/OC9 OJT NOS Version No.: 2.0 NSQF Level: 3	**00:00 Hours**	**00:00 Hours**	**60:00Hours**	**00:00Hours**	**60:00 Hours**
Module 9: OJT.	00:00 Hours	00.00 Hours	60:00Hours	00:00Hours	60:00 Hours
DGT/VSQ/N0102 Employability Skills NOS Version No.: 1.0 NSQF Level: 3	**60:00 Hours**	**00:00 Hours**	**00:00Hours**	**00:00Hours**	**60:00 Hours**
Module 10: Employability Skills	60:00 Hours	00:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Total Duration	**150:00 Hours**	**180:00 Hours**	**60:00Hours**	**00:00Hours**	**390:00 Hours**

Module Details

Module1: Apply Safe Working Practices

Mapped to AUT/0404/OC1

Terminal Outcomes:

- Apply and maintain Safe Working Practices
- Recognize any unsafe situations according to site policy.
- Identify fire and safety and fire hazards
- Identify different fire extinguishers and use them as per requirements.
- Perform bubble test for LPG leakage in 3 wheeler.
- Follow basic pollution control measure used in automobile shop surroundings.

Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements according to site policy. • Recognize any unsafe situations according to site policy, and assess his report accordingly. • Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures. • Difference between BS & Euro norms. • Basic knowledge about Road Transport & Traffic rules.	• Recognize any unsafe situations according to site policy, and assess his report accordingly. • Demonstrate Personal Productive Equipment (PPE) like: safety helmet, safety glove, safety shoe, use the same as per related working environment. • Demonstrate basic first aid & CPR and use them under different circumstances. • Identify different fire extinguishers and use the same as per requirement in a mock drill. • Identify the differences of BS I, II,III,IV, VI • Preventive maintenance on selective parts.
Classroom Aids: Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements: First Aid box, Different types of fire extinguishers, PPE kits, Safety charts, Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12	

pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter, Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer, Drill twist,Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches.

Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw .

Module2: Identify different parts of 2/3 wheeler and demonstrate their uses.
Mapped to AUT/0404/OC2

Terminal Outcomes:

- Locate the different parts of 2/3 wheeler
- State the basic differences between different types of motorcycles, scooters and auto rickshaw
- Define the uses of various parts of 2/3 wheeler
- Identify different parts of an IC engine
- Recognize an IC engine as petrol or diesel engine
- Identify different parts of alternative fuel feed system

Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
● Knowledge on different parts of 2 wheeler ● Differences between motorcycles, scooters, auto rickshaw ● Define the functions of different parts of 3 wheeler ● Functions of main parts of an IC engine.	● The students will be able to do the following: ● Identify different parts of 2 wheeler and 3 wheeler ● Distinguish the difference between motorcycles, scooters, auto rickshaw with their main parts ● Locate the different parts and application in the 2/3 wheeler.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes Spanners socket with speed handle, T-bar, ratchet and universal, Wire cutter and stripper Adjustable spanner (pipe wrench), Ammeter, Auto Electrical test bench, Working scooter/motor cycle, Working model of MPFI of auto rickshaw	

Module 3: Differentiate two stroke and four stroke engine

Mapped to AUT/0404/OC3

Terminal Outcomes:

- Identify the four stroke and narrate the working principle of four stroke engine
- Differentiate two stroke and four stroke engine

Duration:10:00	**Duration:20:00**
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• The students will be able to describe the following: • Working principle of four stroke engine • Difference between two stroke and four stroke engine	• The student will be able to do the following: • Identify the working of two stroke and four stroke engine • Describe working principle of two stroke and four stroke engine. • Identify the different mechanism of both the engine.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Working scooter/motor cycle Working model of MPFI of auto rickshaw, Allen Key set Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver Ball peen hammer, Philips Screw Driver set, Screw driver, Spanner D.E. set of 12 pieces Adjustable spanner (pipe wrench)	

Module 4: Identify hand tools, measuring tools along with their uses.

Mapped to AUT/0404/OC4

Terminal Outcomes:

- Recognize the hand tools used for repairing 2/3 wheeler, like. Hammer mallet, torque wrench, screw driver, file, etc.
- Describe the purpose and use of hand tools.
- Plan the working principles of measuring instruments and special tools used in auto workshop.
- Apply appropriate tools for lifting a 3 wheeler
- Recognize the measuring instruments with working principle of vernier calliper, calliper, micrometer, scale, feeler gauge etc.

Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Demonstrate the uses of different measuring instruments(Vernier Caliper, Micrometer, Feeler gauge, Multimeter, Tachometer) • Describe the general purpose hand tools used in Automobile workshop with the principle.	• Identify different measuring instruments(Vernier Caliper, Micrometer, Feeler gauge, Multimeter, Tachometer) • Apply general purpose hand tools in Automobile workshop.Measurement of length, depth, diameter(inside & outside). • Measurements of Spark plug gap and valve tappet clearance. • Measurement of voltage, currents & resistance. • Measurement of RPM.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter, Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer, Drill twist, Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame,Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC. Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw	

Module 5: Troubleshoot any fault of engine system, carburettor and transmission system.

Mapped to AUT/0404/OC5

Terminal Outcomes:

- Identify basic problems in an engine and their cause
- Dismantle, replace any parts and reassemble different parts of an engine.
- Identify basic problems in a carburetor and their cause.
- Dismantle, replace any parts and reassemble different parts of a carburetor.
- Define the necessity of tuning of a carburetor and to able to tune it practically.
- Diagnose basic problem of a clutch and their causes.
- Diagnose basic problem of a gearbox and their causes.
- Dismantle, replace any parts and reassemble a clutch, dismantle, replace any parts and reassemble a gearbox.
- Repair of sprocket system of a motor cycle, adjust primary and secondary chain
- Identify and change the components as required viz. Belts, oil and air filters etc.

Duration: *20:00*	**Duration**: *40:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Recognize the basic problems in an engine and find the cause • Procedure to dismantle any parts and precautions to be taken • Replacement procedure and reassemble of different parts of an engine • Identify the basic problems in a carburetor, clutch, gearbox and the cause • Dismantle and replacement procedure for the same parts with precautions. • Procedure to change the components viz. Belts, oil, filters etc.	• Basic problems in a carburetor and their causes. • Dismantle different parts of a carburetor • Cleaning, Inspecting & refitting of different parts of a carburetor. • Tuning of a carburetor. • Basic problems in alternating fuel feed system(LPG/CNG) • Dismantling, Cleaning, inspecting & refitting of different parts of Multi valve, LPR, HPR.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter, Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer,	

Drill twist, Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame.
Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC.
Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC
Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw

Module 6: Troubleshoot and repair the fault of brake and wheel, ignition system, electric system.

Mapped to AUT/0404/OC6

Terminal Outcomes:

- Diagnose basic problem of brake system and their causes.
- Dismantle, replace any parts and reassemble a brake shoe/disc brake.
- Diagnose basic problems of wheel system and their causes.
- Dismantle, replace any parts and reassemble a wheel
- Diagnose basic problems of ignition system and their causes.
- Dismantle, replace any parts and reassemble ignition system
- Diagnose basic problems of battery and their causes.
- Replace/ repair the connection of battery.
- Diagnose basic problems of lighting system, switch, relay, and their causes.
- Repair of lighting system, switches, relays..

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Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
● The student will able to describe the following:- ● Basic problem of brake system and their causes. ● Procedure of dismantling, Cleaning, Inspecting & assembling Brake assembly. ● Trouble shooting of Brake system. ● Brake bleeding process. ● Basic problems of ignition system and their causes. Dismantling, Cleaning, replacing parts of ignition system. Basic problems of battery and their causes. ● Describe the procedure of replacing a Battery in a correct sequence. Basic problems of lighting system, switch, relay, and their causes.	● The students will be able to do the following activities: ● Basic problem of brake system and their causes. ● Dismantling, Cleaning, Inspecting & assembling Brake assembly. Trouble shooting of Brake system. Brake bleeding process. ● Checking of Toe in & Toe out in 3 wheeler. ● Overhauling of suspension system.Basic problems of ignition system and their causes ● Dismantling, Cleaning, replacing parts of ignition system. Basic problems of battery and their causes. ● Replacing a Battery in a correct sequence. Basic problems of lighting system, switch, relay, and their causes ● Trouble shooting of Starter motor. Basic trouble shooting in electrical accessories.
Classroom Aids:	

Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook
Tools, Equipment and Other Requirements
Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter,Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer, Drill twist,Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw

Module 7: Repair parts like fork, suspension system, steering column, mud guard, lubrication system

Mapped to AUT/0404/OC7

Terminal Outcomes:

- Diagnose basic problems of fork, suspension system, steering column, mud guard, lubrication system. and their causes.
- Replace/ repair the fork, suspension system, steering column, mud guard, lubrication system.

Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Describe the procedure to find the basic problems of fork, suspension system, steering column, mud guard. • Exhibit the system of lubrication and replacement of lubrication in timely manner. • Describe the procedure for repairing the fork, suspension system, steering column and mud guard.	• Diagnose basic problems of fork • Diagnose suspension system, steering column, mud guard • Check the lubrication system and replace the lubrication in timely manner. • Replace/ repair the fork, suspension system, steering column, mud guard, lubrication system.
Classroom Aids:	
Computer,Projection Equipment,Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter,Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer,Drill twist,Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame,Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC. Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw	

Module 8: Repair alternate fuel feed system in 3 wheeler (LPG/CNG)

Mapped to AUT/0404/OC8

Terminal Outcomes:

- Demonstrate different alternative fuel feed system required in 3 wheeler.
- Replace CNG kit/LPG kit in a 3 wheeler and test it for its functionality

Duration: *10:00*	**Duration**: *20:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Explain different alternative fuel feed system in 3 wheeler • Describe the function of CNG kit/LPG kit in a 3 wheeler	• Identify basic problems in alternating fuel feed system(LPG/CNG) • Dismantle of different parts of Multi valve, LPR, HPR • Clean, inspect and refit the different parts of multi valve, LPR and HPR.
Classroom Aids:	
Computer,Projection Equipment,Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Allen Key set, Caliper inside, Calipers outside, Center Punch, Dividers, Hands file, Electrician Screw Driver, Ball peen hammer, Philips Screw Driver set, Screw driver, Scriber, Spanner D.E. set of 12 pieces, Spanner, ring set of 12 metric sizes, Spanners socket with speed handle, T-bar, ratchet and universal, Steel rule, Wire cutter and stripper, Adjustable spanner (pipe wrench), Ammeter,Lead acid 12 V Battery –charger, Chisel flat, Cir clip pliers Expanding and contracting type, Clamps C, soldering iron, Depth micrometer (digital), Outside micrometer, Drill twist,Electric Soldering Iron, Electric testing screw driver, Feeler gauge, File flat, half round File, Square, File, triangular File, surface plate, Grease Gun, Hacksaw frame.Hammer Ball Peen with handle, Insulated Screw driver, Multimeter digital LCD DC AC. Outside micrometer, Motor cycle repairing stand, Spark lighter, Tachometer , Torque wrenches Tyre pressure gauge with holding nipple, V' Block, Vernier caliper, Voltmeter 0-50V/DC Wire Gauge (metric), Grinding machine (general purpose), Trolley type portable air compressor single cylinder, Working scooter/motor cycle, Working model of MPFI of auto rickshaw	

Module 9 OJT

Mapped to AUT/0404/OC9

Terminal Outcomes:

Assessor will check report prepared for this component of training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)

Duration:*00:00*	**Duration**: *60:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
	• Assessor will check report prepared for this component of training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)
Classroom Aids:	
Tools, Equipment and Other Requirements	

Module10: Employability skills

Mapped to DGT/VSQ/N0102, v 1.0

Employability skills

Terminal Outcomes:

1. Demonstrate a comprehensive knowledge of constitutional values and apply them in their actions, decisions, and interactions, thereby upholding the principles of the constitution.
2. Develop proficiency in basic English skills, including reading, writing, listening, and speaking, enabling effective communication in everyday situations.
3. Exhibit proficiency in basic communication skills, including active listening, effective verbal and nonverbal communication, and clarity in expressing ideas, fostering successful interpersonal interactions.
4. Explain financial and legal literacy, including understanding key financial concepts, making informed financial decisions, and navigating legal frameworks related to personal and business finances.
5. Interpret digital tools and technologies, navigating online platforms, and practicing safe and responsible digital behavior.

- Discuss the importance of Employability Skills in meeting the job requirements. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. Discuss 21st century skills such as Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life.

- Use basic English for everyday conversation in different contexts, in person and over the telephone. Read and understand routine information, notes, instructions, mails, letters etc. written in English. Write short messages, notes, letters, e-mails etc. in English.
- Demonstrate how to communicate in a well -mannered way with others. Apply verbal and non-verbal communication etiquette and active listening techniques in various settings. Demonstrate working with others in a team
- Show how to conduct oneself appropriately with all genders and PwD.
- Select financial institutions, products and services as per requirement. Carry out offline and online financial transactions, safely and securely. identify common components of salary and compute income, expenses, taxes, investments etc.
- Show how to operate digital devices and use the associated applications and features, safely and securely. Use e-mail and social media platforms and virtual collaboration tools to work effectively. Use the features of word processor, spreadsheets and presentations. Create a biodata.
- Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research. Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity
- Identify different types of customers. Identify and respond to customer requests and needs in a professional manner

Classroom Aids:

Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook

Details Syllabus Content

Detail of Theory Syllabus: 90 hours

SL NO	CONTENT	DETAILS
1	**Introduction to personal safety, Measuring Instruments and Hand Tools.**	(1.1) Knowledge of safe working environment (1.2) Knowledge about occupational health and personal safety. (1.3) Precautions on fire and safety hazards. (1.4) Basic first aid. (1.5) Use of different fire extinguishers. (1.6) Use of different measuring instruments(Vernier Caliper, Micrometer, Feeler gauge, Multimeter, Tachometer) (1.7) General purpose hand tools used in Automobile workshop.
2	**Introduction to 2 wheeler and 3 wheeler : Main Components and their uses.**	2.1 Knowledge on different parts of 2 wheeler 2.2 Differences between motorcycles, scooters, auto rickshaw 2.3 Define the use of different parts of 3 wheeler 2.4 Functions of main parts of an IC engine.
3	**Four stroke engine: Working Principle.**	3.1 Working principle of four stroke engine 3.2 Difference between two stroke and four stroke engine
4	**Alternating fuel feed system 3 wheeler.**	4.1 Different alternative fuel feed system in 3 wheeler 4.2 Function of CNG kit/LPG kit in a 3 wheeler
5	**Basic pollution norms, traffic rules and preventive maintenance.**	5.1 Knowledge about BS I, II,III,IV, VI 5.2 Difference between BS & Euro norms. 5.3 Preventive maintenance on selective parts. 5.4 Basic knowledge about Road Transport & Traffic rules.

Detail of Practical Syllabus: 180 Hours

SL NO	CONTENT	DETAILS
1	**Use of different types of fire extinguishers.**	1.1 Application of A,B,C type fire extinguishers. 1.2 Do & Don't in fire hazards.
2	**Use of Vernier Caliper, Micrometer, Feeler Gauge, Multi-meter & Tachometer.**	2.1 Measurement of length, depth, diameter(inside & outside). 2.2 Measurements of Spark plug gap and valve tappet clearance. 2.3 Measurement of voltage, currents & resistance. 2.4. Measurement of RPM.
3	**Troubleshooting of problems related to Carburetor & Alternate Fuel Feed System (LPG/CNG).**	3.1 Basic problems in a carburettor and their causes. 3.2 Dismantle different parts of a carburettor 3.3 Cleaning, Inspecting & refitting of different parts of a carburettor. 3.4 Tuning of a carburettor. 3.5 Basic problems in alternating fuel feed system(LPG/CNG) 3.6 Dismantling, Cleaning, inspecting & refitting of different parts of Multi valve, LPR, HPR.
4	**Troubleshooting of problems related to Clutch.**	4.1 Basic problem of a clutch and their causes. 4.2. Dismantling, replacing any parts and reassembling a clutch 4.3. Trouble shooting of clutch.
5	**Troubleshooting of problems related to Gear Box.**	5.1 Trouble shooting of Gear Box 5.2 Dismantling, Cleaning, Inspecting & assembling a Gear Box. 5.3 Understanding Gear Train & Gear shifting mechanism.
6	**Troubleshooting of problems related to Wheel brake and suspension system:**	6.1 Basic problem of brake system and their causes. 6.2 Dismantling, Cleaning, Inspecting & assembling Brake assembly. 6.3 Trouble shooting of Brake system. 6.4 Brake bleeding process. 6.5 6.5. Checking of Toe in & Toe out in 3 wheeler. 6.6 Overhauling of suspension system.
7	**Troubleshooting of problems related to Battery, Ignition System, Starter Motor & Electrical Accessories.**	7.1 Basic problems of ignition system and their causes 7.2 Dismantling, Cleaning, replacing parts of ignition system 7.3 Basic problems of battery and their causes. 7.4 Replacing a Battery in a correct sequence 7.5Basic problems of lighting system, switch, relay, and their causes 7.6 Trouble shooting of Starter motor. 7.7 Basic trouble shooting in electrical accessories.

Detail of Employability Skills Syllabus: 60 hours

Key Learning Outcomes

Introduction to Employability Skills **Duration: 1.5 Hours**

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship **Duration: 1.5 Hours**

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century **Duration: 2.5 Hours**

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills **Duration: 10 Hours**

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting **Duration: 2 Hours**

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills **Duration: 5 Hours**

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion **Duration: 2.5 Hours**

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy **Duration:5 Hours**

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills **Duration: 10 Hours**

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship **Duration: 7 Hours**

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service **Duration: 5 Hours**

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs **Duration: 8 Hours**

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	**Name of the Equipment**	**Quantity**
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required
2.	UPS	As required
3.	Scanner cum Printer	As required
4.	Computer Tables	As required
5.	Computer Chairs	As required
6.	LCD Projector	As required
7.	White Board 1200mm x 900mm	As required
Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.		

Projected Tools and Equipment cost for Two/ Three Wheeler Mechanic Trade under NQR

Sl. No.	Tools / Equipment	Specification	Qty.
1	Allen Key set	12 pieces (2mm to 14mm)	6
2	Caliper inside	15 cm Spring	6
3	Calipers outside	15 cm Spring	6
4	Center Punch	10 mm. Dia. x 100 mm.	6
5	Dividers	15 cm Spring	6
6	Hands file	20 cm. Second cut flat	6
7	Electrician Screw Driver	250 mm	6
8	Ball peen hammer	Peen 0.5 kg in with handle	6
9	Philips Screw Driver set	5 pieces (100 to 300mm)	6
11	Screw driver	20cm.X 9mm. Blade	6
12	Screw driver	30 cm. X 9 mm. Blade	6
13	Scriber	20 cm	6
14	Spanner D.E. set of 12 pieces	(6mm to 32mm)	6
15	Spanner, ring set of 12 metric sizes	6 to 32 mm.	6
16	Spanners socket with speed handle, T-bar, ratchet and universal	Up to 32 mm set of 28 pieces with box	6
17	Steel rule	30 cm (inch and metric)	6

18	Wire cutter and stripper	Plastic Handle Wire Strippers Crimper Plier Electrical Tool	6
19	Adjustable spanner (pipe wrench)	350 mm	2
20	Ammeter	300A/ 60A DC with external shunt	4
21	Auto Electrical test bench	Testing of all opening points of one	1
22	Lead acid 12 V Battery –charger	110 – 265 V AC supply(50 /60 Hz), 14.2 V max output, max current 1 amp	2
23	Blow Lamp	1 litre	2
24	Chisel flat	2.2 cm x 20 cm flat	4
25	Chisel octagonal flat	200 mm X 6 mm	4
26	Circlip pliers Expanding and contracting type	15cm and 20cm each	4
27	Clamps C	100 mm	2
28	Clamps C	150 mm	2
29	Clamps C	200 mm	2
30	Cleaning tray	45x30 cm.	4
31	Copper bit soldering iron	0.25 Kg	2
32	Cylinder bore gauge	capacity 18 to 160 mm	2
33	Depth micrometer (digital)	0-25mm, LC: 0.02mm	4
34	Outside micrometer	0 – 25 mm, LC: 0.02	4
35	Drill twist	1.5 mm to 13 mm (23 pcs) by 0.5 mm step, 14mm, 15mm	4
	Drill twist	14mm, 15mm	2
36	Electric Soldering Iron	230 V 60 watts, adjustable temperature 200-450°C, 5 tips	2
37	Electric testing screw driver	6’	4
38	Feeler gauge	20 blades (metric)	4

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
CTS/ATS	Mechanic Two and Three wheeler	5	-	-	-	-
Diploma	Automobile Engineering/Mechanical Engineering(Specialization in Automobile Engineering)	3	-	-	-	-
B. Tech/BE	Automobile/ Mechanical Engineering (Specialization in Automobile Engineering)	2	-	-	-	-
ITI	Mechanic Motor Vehicle Trade	3	-	-	-	-
BSC	Automobile Maintenance	2	-	-	-	-

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "2/3 Wheeler Mechanic/Technician" mapped to QP: "STC-AUR / NSQF -2017 /801" OR STC-AUT/2022/0404, Minimum accepted score is 80%.	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 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
CTS/ATS	Mechanic Two and Three wheeler	5	-	-	-	-
Diploma	Automobile Engineering/ Mechanical Engineering	4	-	-	-	-
B. Tech/BE	Mechanical Engineering	4	-	-	-	-
B.Sc	Automobile Maintenance	4	-	-	-	-
ITI	Mechanic Motor Vehicle Trade	6	-	-	-	-

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "2/3 Wheeler Mechanic/Technician" mapped to QP: "STC-AUR / NSQF -2017 /801" OR STC-AUT/2022/0404, Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guide lines is 80%.

Assessment Strategy

Assessment will be based on the concept of Independent Assessors empaneled with West Bengal State Council of Technical & Vocational Education & Skill Development (WBSCT&VE&SD), identified, selected, trained and certified on Assessment techniques. These Assessors would be aligned to assess as per the laid down criteria.

WBSCT&VE&SD would conduct assessment only at the training centers or designated testing centers authorized by WBSCT&VE&SD.

Ideally, the assessment will be a continuous process comprising of two distinct steps:

A. Continuous assessment by Trainers
B. Term end /Final Assessment by WBSCT&VE&SD

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Each Performance Criteria in the NOS will be assigned marks for theory and/or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets/question banks created by subject matter experts through WBSCT&VE&SD, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

i. Written Test: This will comprise of (i) True/False Statements and/or (ii)Multiple Choice Questions and/or (iii) Matching Type Questions. Online system for this will be preferred.
ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc.
iii. Structured Viva-voce: This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand.

Marks distribution as per outcome

Course Name	Sr No	Outcome No.	Outcome Name	Th Hrs	Pr Hrs	Total marks Th	Total marks Pr
2/3 WHEELER MECHANIC/TECHNICIAN	1	AUT/ 0404/ OC1	Apply Safe Working Practices	10	20	20	70
	2	AUT/ 0404/ OC2	Identify different parts of 2/3 wheeler and demonstrate their uses.	10	20	20	70
	3	AUT/0404/ OC3	Differentiate two stroke and four stroke engine	10	20	10	70
	4	AUT/ 0404/ OC4	Identify hand tools, measuring tools along with their uses.	10	20	10	80
	5	AUT/ 0404/ OC5	Troubleshoot any fault of engine system, carburetor and transmission system.	20	40	30	140
	6	AUT/0404/ OC6	Troubleshoot and repair the fault of brake and wheel, ignition system, electric system.	10	20	20	100
	7	AUT/ 0404/ OC7	Repair parts like fork, suspension system, steering column, mud guard, lubrication system.	10	20	20	60
	8	AUT/ 0404/ OC8	Repair alternate fuel feed system in 3 wheeler (LPG/CNG)	10	20	20	60
	9	AUT/0404/ OC9	OJT.	0	60	0	150
	10	DGT/VSQ/N0102	Employability Skills- 60 hrs.	60	0	50	0
	TOTAL Theory 150 Hrs, Practical 240 Hrs (Including Employability Skill 60 Hrs)					200	800

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to Be known and/or understood in order to accomplish or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training Outcome is specified in terms of knowledge, understanding(theory)and skills (practical application).
OJT(M)	On-the-job training(Mandatory);trainees are mandated to complete specified hours of training on site
OJT(R)	On-the-job training(Recommended);trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psycho motor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards