DIPLOMA IN TWO WHEELER MECHANISM AND MAINTENANCE

Skill Based Curriculum – NSQF Level 5

Duration: 1 Year

AUTOMOBILE SECTOR

THE GANDHIGRAM RURAL INSTITUTE – DEEMED TO BE UNIVERSITY
GOVERNMENT OF INDIA
MINISTRY OF EDUCATION (SHIKSHA MANTRALAYA)
Accredited by NAAC with "A" Grade (3rd Cycle)

DIPLOMA IN TWO WHEELER MECHANISM AND MAINTENANCE

(Revised in 2021)

DDU-KK

(COMMUNITY COLLEGE)

[Funded by UGC, New Delhi]

NSQF Level 5

Developed by

The Gandhigram Rural Institute – Deemed to be University

MINISTRY OF EDUCATION (SHIKSHA MANTRALAYA), Government of India

Accredited by NAAC with "A" Grade (3rd Cycle)

Gandhigram – 624302

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Special acknowledgement is extended by GRI to the following expert members who had contributed immensely in this curriculum framework.

Experts within the Institute		Experts from the Industry and Service Providers	
Dr.L.Raja Principal Community College Gandhigram Rural Institute Gandhigram	Chairperson	**Mr. Naveen Bhaskar** **Manager**, Yamaha Training Academy Yamaha Motors India Pvt.Ltd, Chennai 9902844007 NBhaskar@yamaha-motor-india.com	Member
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FACULTY DETAILS

S.No	Staff Name	Designation	Photo
1.	Dr.Seerangarajan **Specialization** • Operation Management, • Textile Management, • Natural Dyes	Director	
2.	Dr.L.Raja **Specialization** • Peace Making, • Gandhian Thought, • MicroPlanning	Principal	
3.	Dr.R.Venkataravi **Specialization** • Rural Development, • Extension	Coordinator	
4.	Er. M.Praveen kumar **Specialization** • Automobile Engineering • Thermal Engineering • Yamaha Bronze certification	Guest Faculty	
5.	Er. J.Muthukumar **Specialization** • Automobile Engineering • Thermal Engineering • Yamaha Bronze certification	Guest Faculty	
6.	Mr. T. Saravanakumar **Specialization** • Mechanical Lab Operations • QC analyst • Yamaha Beginner certification	Lab Attendant	

CONTENTS

1. INTRODUCTION

The Gandhigram Rural Institute (GRI) - Deemed to be University, Gandhigram is one of the pioneering institutions working for rural development and preparing human resources for managing rural development during last six decades. The GRI has a Department of Lifelong Learning and Extension which is mainly working for the vocational education and training for skill development within the framework of University system. In the light of strengthening Teaching, Training and Research in the area of Lifelong Learning, attempts are being made to revisit and revise the existing curriculum of different academic courses and developing new curricula for offering courses at various levels. In this context, focus is on the "skills and knowledge" needed to work with people in various employment settings, in the rural and semi-urban areas, particularly in the unorganized sector and also in the Non-governmental organizations. The Lifelong Learning has become a fundamental goal of recent educational policies as a way to achieve socio-economic development and as a tool for promoting knowledge based society.

In recent times we have seen huge changes in the Indian industry which registered an imposing development during the last decade. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

The UGC has been emphasizing the efforts by the Universities which are at the top of the Institutional framework available for the non-formal education, vocational education and skill training which would suit the changing needs of the society and sustain the development. In this background, the Gandhigram Rural Institute has established a Community College (CC) with the support of the UGC, New Delhi, to create employment and to provide qualified manpower for motorcycle repairing and maintenance in rural areas.

The Community College aims at increased accessibility to quality higher education to a large number of individuals in the rural community who are not able to move to traditional courses offered by colleges and universities. It offers vocational skill development in the form of traditional coursework with a large emphasis on hands on training with state of the art facilities. These advantages enable the trained manpower to move directly to the employment sector.

The Community College (CC) is offering one year Diploma in Two Wheeler Mechanism and Maintenance. It mainly consists of Domain area and Core area. In the Domain area Basics of two wheelers, Major systems in two wheelers, Assemblies and Auto-Electrical & Practical impart professional - skills and knowledge, while in the Core area –Professional Equipments and Ethics and Employability Skills imparts requisite core skill knowledge and life skills. In the second semester of the programme, students upgraded their practical knowledge by Industrial Placement for Hands-on-Training.

2. TRAINING METHODOLOGY

The Diploma programme is of two semester duration and follows the credit system. In the first semester the students are introduced to the essential elements of two wheelers and appropriate practice in the form of practical training is provided in the first semester. There are five courses in the first semester. Each of these courses has both Theory and Practical components. At the end of the first semester candidates of the Diploma in Two wheeler mechanism and maintenance broadly need to demonstrate that they are able to:

- Read and understand technical parameters / documents, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Able to fill the job card in the dealerships to repair the faulty two wheeler and to perform the service.
- Document the technical parameters related to the task undertaken

The trainee will be tested for his skill, knowledge and attitude during the period of course. The evaluation and Grading will be done as per Gandhigram Rural Institute pattern. Each course will be evaluated for a maximum of 100 marks – Combining both Theory and Practical components as suggested by UGC for vocational courses in Community Colleges. Being a skill based programme, the passing minimum will be 50%. Teaching and Training process includes the following:

- Classroom sessions
- Demonstration
- Hands-on-Training with the help of industrial partner
- ICT enabled interactive sessions
- Industrial Placement
- Exposure Visit to Industry
- Study Material in English and Tamil (bilingual)

INDUSTRY COLLABORATION:

- Networking with identified Two-Wheeler Dealers, Workshops and Technical Institutions in and around Dindigul to provide Practical Internship Training and opportunities for hands-on Training.
- Experts available in these industrial units / Technical Institutions will be invited as Guest Faculty
- Signing of Memorandum of Understanding [MOU] by the Community College with identified Two Wheeler Dealers and Workshops.
- During the first semester students are placed in the industrial units / workshops for one month Internship.
- During the second semester for practical training, students will be placed in the Industry under Industry Placement Programme [IPP].

METHOD OF ASSESSMENT:

- The Controller of Examination, GRI shall conduct the End Semester Examination [ESE] as is being practiced in the case of other Certificate / Diploma Programmes.
- The course teacher will be the examiner.
- The Industry Experts, if required, can be invited for conducting the practical Examinations.
- For theory papers assessment is based End Semester Examination only.
- A student will be declared to have passed in a course when she / he has scored 40% in Theory and 60% in Practical.
- In the Case of student absent / failed in a subject in a semester examination, she / he has to write both Theory and Practical examination for that subject during the subsequent semesters.
- A student has to pass in course with maximum attempts of 5 times [1+4Times]
- The second semester practical examination includes - 40% for Internship Report and 60% for practical examination.

TIMELINE OF ASSESSMENT:

Months		1	2	3	4	5	6	7	8	9	10	11	12
Semester - I	Regular												
	OJT												
Semester - II	Regular												
	OJT												

3. NSQF LEVEL COMPLIANCE

The learning outcomes of the Diploma Course in Two Wheeler Mechanism and Maintenance matches with the level descriptor at LEVEL 5. Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

a. Process

b. professional knowledge,

c. professional skill,

d. core skill and

e. Responsibility.

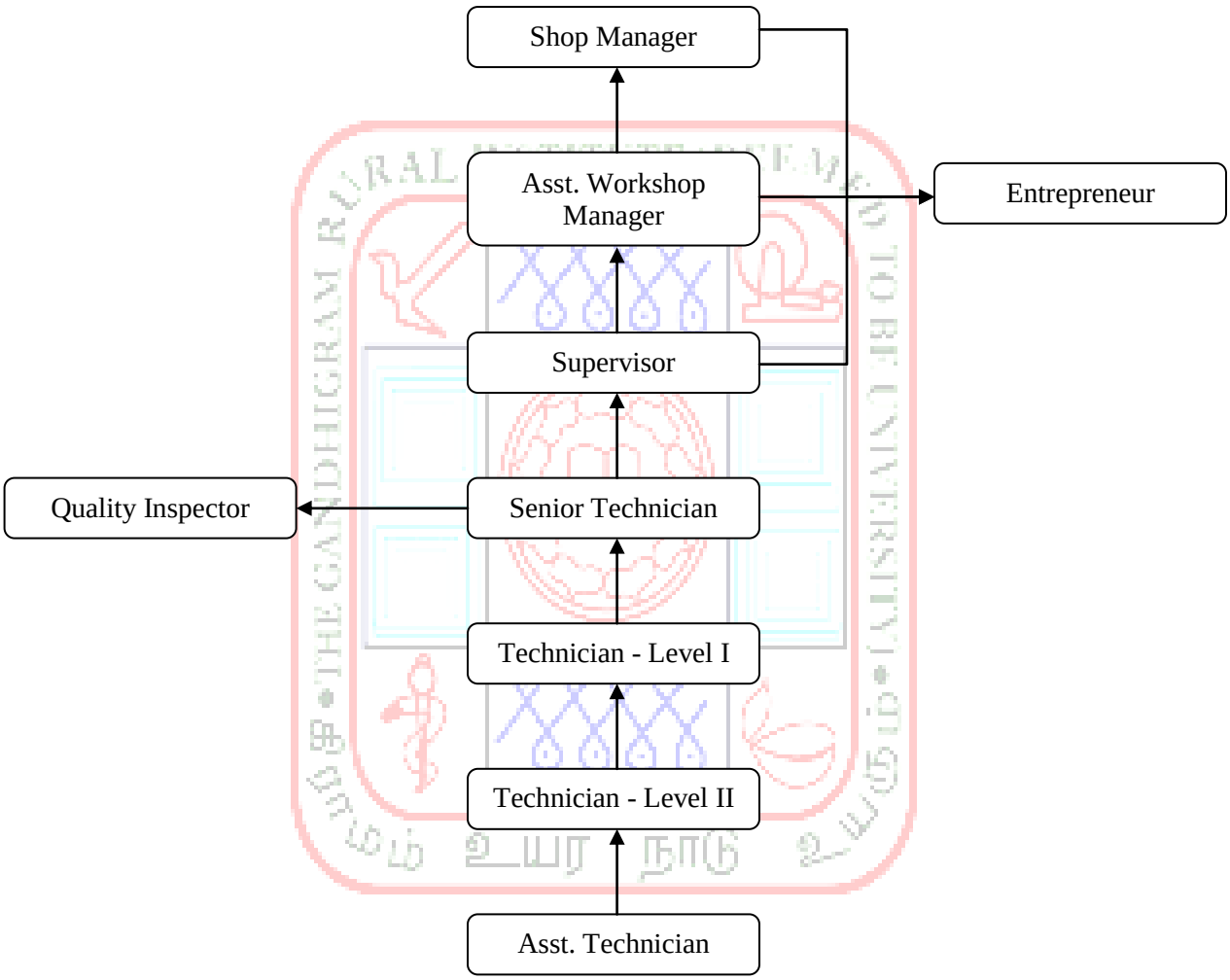
The NSQF LEVEL 5 descriptor is given below:

- Name of the QP: Automotive Service Technician [level 5] QP Ref. ID: ASC/ Q 1403
- NOC: 7233.22 - Petrol Engine Mechanic, 7233.24 - Diesel Engine Mechanic
  3115.20 - Automotive Engineering Technician

Level	Process required	Professional knowledge	Professional skill	Core skill	Responsibility
Level - 5	Job that requires well developed skill, with clear choice of procedures in familiar context	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools materials and information	Desired mathematical skill, understanding of social, political and some skill of collecting and organizing information, communication	Responsibility for own work and learning and some responsibility for other's works and learning

4. JOB ROLE

Those who had completed one year Diploma in Two wheeler mechanism and maintenance have the entry eligibility of the following job roles especially in the Technicians and supervisor category.



Apart from the above jobs, there is an opportunity to enter in to the Manufacturing plants in the category of trainee grades.

5. OBJECTIVES & LEARNING OUTCOMES

The main objective of the Diploma programme is

1. To convert interested rural student into professional technician.
2. Make the rural students as qualified and skilled man power for the two wheeler service sector in the rural and urban areas.
3. To create an opportunity for the rural students to become an entrepreneur and increase the employability.

Learning Outcomes

After completion of one year Diploma in two wheeler mechanism and maintenance our trainee is

- able to understand the history of Automobile Industry and major two wheeler manufactures in India
- provided knowledge on various types of two wheelers
- able to know the principles, general concepts, material used, type of Two Wheeler chassis
- able understand the function and classification of two / four stroke engine and their components
- enabled to explain the function of clutch and gear box
- able to explain the need for suspension, brakes and their types
- able understand the function and classification of wheels and tires
- enabled to Identify the parts of Fuel Injection System and check the trouble shooting in FI
- enabled to trouble shoot the sensors by using FI Diagnostic Tool
- capable of working of ECU
- enabled lighting system like the Head Light, Tail light, Parking light as per norms
- able to understand basics of general servicing and various types of servicing of the two wheelers
- able to do the service and maintenance of the electrical circuit and lighting system
- enabled to explain the function of fuel tank, carburetor and fuel injection system
- able to explain the need for tuning the engine and its adjustment
- enabled handle and dismantling engine / assemble the engine after servicing
- capable of adjusting the clutch system, servicing and fitting
- enabled to identify the electrical parts & examine their goodness with suitable devices
- able understand the basics of electrical systems and Safety Precautions

- capable of dismantling the battery and charge; and re-fit battery in series connection and parallel connection
- able to dismantle the sparkplug and clean it. Assess its capability
- enabled to dismantle assemble Ignition coil, distributor and CDI
- able to overhauling the two stroke engine and four stroke engine
- able to overhauling the suspension system, brake systems and clutch system.

6. ASSESSMENT OUTCOME WITH ASSESSMENT CRITERIA

Week	Work	Outcome	Asset & Tools Usage	Study Material
1	Identify the General tools and Special Tools	Trainee is able to identify the available general tools and special tools in the workshop	General tools and Special Tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
2	Water washing, Greasing and Lubricating	Trainee is able to identify the proper position of the two wheeler Water washing, cleaning and drying Lubricating and applying grease Checking function and performance after servicing	Water wash Machine	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
3	Dismantling the battery	Removing the side covers of the two wheeler with suitable tool Trainee is able to identify the battery terminals Following the standard procedure of removing battery Select the suitable electrical kit to examine the battery goodness Consult the authorities on if any replacement	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
4	Dismantle the sparkplug and clean	Trainee is able to identify the sparkplug in a given vehicle Removing the sparkplug with suitable special tool	General tools	• Service Manual • Tools catalogue

		Clean the sparkplug with suitable method and standard procedure Consult the authorities on if any replacement		• A Text Book of Two wheeler Mechanism and Maintenance
5	Dismantling and cleaning of the air filter, and assembling and refitting the air filter	Follow safety precautions Cleaning air filter Consult the authorities on if any replacement	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance

6 to 7	Dismantling and assembling the components to be mounted on a chassis	• Select, care and use of Personal Protective Equipments [PPE] while carrying out dismantling / assembling
		• Select the tools / equipments required for dismantling / assembling
		• Ensure availability and use the tools in the timely manner
		• Carry out their dismantling and assembling of components
		  • By reviewing
		  • Technical data
		  • Removal and Replacement procedures
		  • Legal Requirement
		• Check for proper functionality / adjustment
			General tools & Special tools	• Service Manual
				• Tools catalogue
				• A Text Book of Two wheeler Mechanism and Maintenance

8	Replacing the Drum Brake	• Ensure availability and use the tools in the timely manner
		• Carry out their dismantling and assembling of Drum Brake
		  • By reviewing
		  • Technical data
		  • Removal and Replacement
			General tools	• Service Manual
				• Tools catalogue
				• A Text Book of Two wheeler Mechanism and Maintenance

		procedures • Legal Requirement • Check for proper functionality / adjustment		
9	Overhauling of Front fork	• Ensure availability and use the tools in the timely manner • Carry out their dismantling and assembling of Front fork • By reviewing • Technical data • Removal and Replacement procedures • Legal Requirement • Discuss within the Team and higher authority on need for replacement and its cost implication • Check for proper functionality / adjustment	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
10	Dismantling and assembling Suspension System	Ensure availability and use the tools in the timely manner Carry out their dismantling and assembling of Suspension System Check for proper functionality / adjustment	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
11	Dismantling and servicing of carburetor	Follow safety precautions Dismantling of carburetor Follow the technical standard Servicing Fitting carburetor and Check the performance	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance

12	Dismantling, servicing and assembling Fuel system	Follow safety precautions Dismantling of Fuel system Follow the technical standard servicing Fitting and checking the performance	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
13	Tuning the engine for slow speed and check the smoke	Follow safety precautions Follow the technical standard in tuning the engine Checking the performance Consult the authorities on if any replacement	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
14	Replacing the oil in recovery tank for Disc Brake	Ensure availability and use the tools in the timely manner Replacing the oil in recovery tank for Disc Brake By reviewing • Technical data • Removal and Replacement procedures • Legal Requirement • Discuss within the Team and higher authority on need for replacement and its cost implication Check for proper functionality / adjustment	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
15	Replacing the Disc Brake	• Ensure availability and use the tools in the timely manner • Carry out their dismantling and refitting of Disc Brake • By reviewing • Technical data	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler

		• Removal and Replacement procedures • Legal Requirement • Discuss within the Team and higher authority on need for replacement and its cost implication • Check for proper functionality / adjustment		Mechanism and Maintenance
16	Dismantling and Assembling Continuous Variable transmission system	• Ensure availability and use the tools in the timely manner • Carry out their dismantling and servicing of transmission system • By reviewing • Technical data • Removal and Replacement procedures • Legal Requirement • Check for proper functionality / adjustment	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
17	Dismantling and Assembling the Multi-plate clutch	• Ensure availability and use the tools in the timely manner • Carry out their dismantling and assembling of Multi-plate Clutch • By reviewing • Technical data • Removal and Replacement procedures • Legal Requirement • Check for proper functionality / adjustment	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
18	Dismantling and assembling Secondary drive in CVT	Ensure availability and use the tools in the timely manner Carry out their dismantling and assembling of Centrifugal Clutch Check for proper functionality / adjustment	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism

				and Maintenance

19	Dismantling and Assembling Constant mesh Gearbox	• Ensure availability and use the tools in the timely manner
		• Carry out their dismantling and assembling of Gearbox
		  • By reviewing
		  • Technical data
		  • Removal and Replacement procedures
		  • Legal Requirement
		• Check for proper functionality / adjustment
			General tools & Special tools	• Service Manual
				• Tools catalogue
				• A Text Book of Two wheeler Mechanism and Maintenance

20	Servicing the clutch assembly	Follow safety precautions Dismantling the clutch assembly Follow the technical standard servicing Checking the performance of clutch assembly Consult the authorities on if any replacement Examine performance of clutch assembly	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
21 to 22	Dismantling the unserviceable engine-cleaning and inspecting the engine parts	Follow safety precautions Dismantling the unserviceable engine Follow the technical standard servicing Checking the performance Consult the authorities on if any replacement Examine performance of the engine	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
23-24	Identify the Engine parts	Select, care and use of Personal Protective Equipments [PPE] while carrying out dismantling engine parts Ensure availability and use the tools in the timely Team work in the shop floor	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler

				Mechanism and Maintenance
25	Dismantling the Two stroke & Four stroke Engine	Select, care and use of Personal Protective Equipments [PPE] while carrying out dismantling engine parts Select the tools / equipments required tasks Ensure availability and use the tools in the timely manner Carry out their dismantling and assembling of components • By reviewing • Technical data • Removal and Replacement procedures • Legal Requirement Check for proper functionality / adjustment	General tools & Special tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
26	Check the Head Light, Tail light, Parking light	Trainee is able to identify the electrical parts of two wheeler Select the suitable electrical tool kit to examine the electrical parts goodness Consult the authorities on if any replacement	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
27	Dismantle and assemble Ignition coil, Distributor and CDI	Trainee is able to identify the electrical parts of two wheeler Dismantle the Ignition coil, Distributor and CDI with standard procedure Select the suitable method to examine the battery goodness Consult the authorities on if any replacement	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
28	Check the electrical components	Follow safety precautions Check the electrical system Consult the authorities on if any replacement	General tools	• Service Manual • Tools

	and signaling components			catalogue • A Text Book of Two wheeler Mechanism and Maintenance
29	Dismantling and assembling Battery coil Ignition System	Ensure availability and use the tools in the timely manner Carry out their dismantling and assembling of Battery coil and Ignition system Check for proper functionality / adjustment	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
30	Dismantling and assembling Magneto coil Ignition System	Ensure availability and use the tools in the timely manner Carry out their dismantling and assembling of Magneto coil Ignition System Check for proper functionality / adjustment	General tools	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
31	Fuel Injection System and check for trouble shooting in FI	Trainee is able to identify the electrical parts of two wheeler Check the FI injection system with diagnostic tool or examine the FI system with FI station. Consult the authorities on if any replacement	General tools & FI Tool	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
32 to 33	Trouble shooting in sensors by using FI	Trainee is able to identify the sensors of two wheeler Examine the sensors with proper Diagnostic tool or FI Station	General tools & FI Tool	• Service Manual • Tools catalogue • A Text Book

	Diagnostic Tool	Consult the authorities on if any replacement		of Two wheeler Mechanism and Maintenance
34	Check the working of ECU	Trainee is able to identify the Electronic control unit of two wheeler Select the suitable method to examine the Electronic control unit Consult the authorities on if any replacement	General tools & FI Tool	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
35	Identify the electrical parts & examine their goodness	Work as Team and consult the superior Trainee is able to identify the electrical parts of two wheeler Select the suitable electrical tool kit to examine the electrical parts goodness Consult the authorities on if any replacement	General tools & FI Tool	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance
36	Identify the Troubles in the given two wheeler	Trainee is able to properly position of the two wheeler on the ramp Able to identify the problems and causes Servicing with specific tools Work as Team and consult the superior Follow safety precautions	General tools & FI Tool	• Service Manual • Tools catalogue • A Text Book of Two wheeler Mechanism and Maintenance

7. STRUCTURE OF THE PROGRAMME

Semester	Course Code	Name of the Course	Theory	Practical	Total Credits	Duration of Exam (Hours)	Theory	Practical	Total Marks	Pass Mark [Combined of 40%Theory and 60% Practical]
FIRST	21TWMV0101	Basic of Two Wheelers	3	3	6	2	40	60	100	40
	21TWMV0102	Major Systems in Two wheelers	3	3	6	2	40	60	100	40
	21TWMV0103	Professional Ethics & Equipments	3	3	6	2	40	60	100	40
	21TWMV0104	Employability Skills	3	3	6	2	40	60	100	40
	21TWMV0105	On Job Training	0	6	6	2	0	100	100	40
	Total Credits for First Semester				**30**					
SECOND	21TWMV0206	Trouble shooting and Overhauling	3	3	6	2	40	60	100	40
	21TWMV0207	Assemblies and Auto-Electrical	3	3	6	2	40	60	100	40
	21TWMV0208	Industrial Placement for Hands-On-Training**	0	18	18	2		100	100	40
	Total Credits for First Semester				**30**					
		Total			**60**		**360**	**540**	**900**	

** - Practical Examination will be conducted by GRI

8. SYLLABUS – FIRST SEMESTER

COURSE -1: BASICS OF TWO WHEELERS

Course Code -21TWMV0101 Credits: Theory – 3 ; Practicals – 3 Marks-100

Objectives: The main purpose of this course is to make the students acquainted with the Workshop environment and also to provide the students opportunities to get know about the basics of the Two Wheeler servicing Workshop and its environment.

Unit I - Introduction

Definition of Automobile - History of Automobile – Short description of Automobile in India – Concept of employability - Major two wheeler companies in India – Future Scope on the field

Unit II: Types of Two wheelers

Types of Two wheelers - mopeds – scooters – motorcycle – race vehicle – E-Bikes – Hybrid bikes – Physically challenged vehicles parts – main components –Case study of different types of two Wheelers

Unit III – Basic components in Two wheelers

Air Filter – Fuel tank & cock – Fuel pump - Canister Box – Carburetor – Sparkplug & its types – AIS - Introduction of chassis - Materials used for frame - Types of chassis used in two wheelers - Components to be mounted on chassis - Decoding the Frame number – Silencer & its types - Catalytic converter – crankcase blow by gas

Unit IV – Basic Electrical components and Safety Precautions

Alternative Current – Direct Current - Ohm's law - watt's law - Battery – components of electrical system – Starting system - Signaling - Lighting components – Charging - Safety Precautions - Screening of audio - visuals materials.

Unit V: Two Wheeler workshop structure

Importance of maintenance – general maintenance schedule –Servicing of two wheeler – periodic checkups - structure of servicing and maintenance workshop- first aid-management of two wheeler workshop.

Reference Books

1. G.B.S. Narang, 2003, Automobile Engineering", 10th Reprint, Khanna Publishers, New Delhi.
2. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India, Chennai
3. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
4. V.Ganesan, 2005, Internal Combustion Engines, Laxmi Publications [P] Limited, New Delhi
5. Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
6. Barry Hollembeak, 2011, Automotive Electricity and Electronics Classroom and Shop Manual, Pack Today Technician Publishing, USA
7. Tony Foale, 2001, Two Wheeler Motorcycle Handling and Chassis, Tonbridge, Spain

COURSE – 2: MAJOR SYSTEMS IN TWO WHEELERS		
Course Code -21TWMV0102	**Credits: Theory – 3 ; Practicals – 3**	**Marks-100**

Objectives: The course aims to provide knowledge on the major systems in Two-Wheelers and also its functions, break-down and trouble shooting.

Unit I – Basics of Engine & its Classification

Introduction – Engine classification – Internal combustion engine – External combustion engine – Spark Ignition – Compression Ignition – Two Stroke – Four Stroke engine. Application of engine in various fields

Unit II - Power train

Introduction of power train – Clutch - Need of Clutch - Materials used for Clutch - Types of Clutch – Clutch Components - Gear box - Need of Gear box - Types of Gear box – Gear box Components – Continuously variable transmission

Unit III –Ignition, Cooling & Lubrication

Introduction of Ignition system – Need of Ignition system - Ignition Timing - Ignition system in 2 stroke & 4 Stroke - Types of Ignition system – Cooling System – Purpose & its types – Radiator –thermostat valve- coolant -Lubrication System - Need of Lubrication System - Components & its Types.

Unit IV - Suspension

Suspension system - Need of suspension - Types of suspension – Telescopic Front Fork - Working of TFF & its components- TFF oil grade and Quantity – Shock absorber – Components - Working of Shock absorber and its Types.

Unit V - Brakes & Wheels

Brakes and its types- sources for brakes- mechanical brakes- pneumatic brakes- hydraulic brakes-Drum brake-Disc brake-ABS-Cornering ABS- CBS-Wheel- Types of wheel –Tyre- Types of tyre – Decoding the Tyre number.

Reference Books

1. G.B.S. Narang, 2003, “Automobile Engineering”, 5th Edition, Khanna Publishers, Delhi.
2. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India Chennai
3. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
4. SRI N. R. Hema Kumar, Automobile Chassis and Body Engineering [Unpublished Manual Prepared in Government Junior College, Palamaner, Andhra Pradesh - 2009]
5. David A Crolla, 2009, "Automotive Engineering-Power Train, Chassis System and Vehicle Body", Butterworth - Heinemann Publishers, New York.
6. Maintenance & Repair of Two Wheelers & Three Wheelers -II by State Council Of Educational Research & Training **(**SCERT**),** Government of Kerala, 2006.

COURSE -3: PROFESSIONAL ETHICS AND EQUIPMENTS
Course Code - 21TWMV0103 Credits: Theory – 3 ; Practicals – 3 Marks-100

Objective: To enable the students by providing basic knowledge about general tools, special tools and main equipments of workshop.

Unit I: General tools
Spanner and its types – Ratchet and offset handle – Socket and its sizes – center punch – chisel – pliers and its types – Hammer and its types – pile and its types – Compression guage – Air guage – L allen key T – allenkey – Multimeter and its usages.

Unit II : Special tools
Purpose of special tools – Torque wrench - Clutch puller, holder – Magneto puller and holder – Crankshaft installer and separator – piston base, pin remover – Valve spring compressor – T-Hex handles – Steering bearing installer – Steering nut socket – Bearing pullers

Unit III : Servicing Equipments
Water wash pumps and it types – Air compressor – Pneumatic gun & wrench – Hydraulic Ramp and its types – wheel balancer – Sparkplug cleaner machine and injector cleaner – Battery charging unit

Unit IV : Workshop maintenance and Check sheets
5S and its benefits – Customer satisfaction – Job card - Pre-delivery Inspection – Periodic Maintenance Check sheets – Final Inspection chart – Tools auditing check sheet

Unit V: Two Wheeler workshop structure & Handling of two wheeler
Importance of maintenance – general maintenance checkups and schedules - structure of servicing and maintenance workshop- first aid-management of two wheeler workshop. Social responsibility of rider – Documents required for rider - Motorcycle & Driving Lesson.

Reference Books

1. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
2. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India Chennai
3. David A Crolla, 2009, "Automotive Engineering-Power Train, Chassis System and Vehicle Body", Butterworth - Heinemann Publishers, New York.
4. G.B.S. Narang, 2003, "Automobile Engineering", 5th Edition, Khanna Publishers, Delhi.
5. Maintenance & Repair of Two Wheelers & Three Wheelers -II by State Council Of Educational Research & Training **(**SCERT**),** Government of Kerala, 2006.
6. SRI N. R. Hema Kumar, Automobile Chassis and Body Engineering [Unpublished Manual Prepared in Government Junior College, Palamaner, Andhra Pradesh - 2009]

COURSE – 4: EMPLOYABILITY SKILLS

Course Code - 21TWMV0104 Credits: Theory – 3 ; Practicals – 3 Marks-100

Objective: To enable the students with required skills for maintaining good relationship with customers through effective communication in service sector.

Unit I - Introduction to Customer Support

Importance of Customer - Types of Customers - their needs - Issues in dealing with the customers- Importance of maintaining good relations with customers in Service providing sector.

Unit II - Communication Skills for Customer Support

Intra personal communication and Body Language - Inter personal Communication in Customer Relationships. Features of an effective Communication. Verbal and non-verbal Communication. Barriers and filters. Listening and active listening. Customer satisfaction - Feedback from Customers.

Unit III - Customer Relationship Skills

Leadership Skills - Team work and public speaking with customer - Importance of maintaining good interpersonal relationship with Customer and co-workers - Effective communication in service delivery.

Unit IV - Personality Traits in delivering Service

Self confidence - Attitude - Working in Group - Time Management - Effective Planning in service delivery - Working towards Goal - Meditation and concentration techniques in the stress situation.

Unit V - Practical Exercises:

Role playing in Workshop [as Manager, Mechanic, Supervisor and also as customer]- Public speaking- Interview - work in a Team - Group Discussion - Discussion on Case Studies from shop Floor and Industry situation. Letter writing to the company- Interaction with Customers in person and also over phone. Listening to the Customer - This process will be carried out through demonstration by the teacher. This will be followed by repeating the process by the students. Every individual student will do all these exercises independently and individually.

Reference Books

1. Stephen P. Robbins and Mary Coulter, 2012, Management [Eleventh Edition], Pearson Education, New Jersey
2. Balasubramaniyan. K, 2005, Essence of Customer Relationship Management, GIGO Publishing
3. Balaji , 2002, Service Marketing and Management, S.Chand Publishing
4. A. Sagadevan and H. Peeru Mohamed, 2002, Customer Relationship Management - A Step-By-Step Approach, Vikas Publishing, New Delhi
5. Kaushik Mukerjee, 2007, Customer Relationship Management, PHI Learning Private Limited, New Delhi.

COURSE – 5: ON- JOB TRAINING (OJT)

Course Code -21TWMV0205 Credit : Practical - 6 Marks-100

Objective

To provide opportunities for the students to have practical training in the industrial environment and create opportunity to gain Hands-on-Experience.

Strategies and Process adopted in the Training Process

- The students will be placed in the identified Two Wheeler Workshops for practical training and create opportunities for gaining Hands-on-Experience
- The On-Job Training will be for two times; first time for 15 days during mid-semester and second time for 15 days after Theory examination at the first semester end; (30 days x 8 hours = 240 hours in the practical training)
- Attendance will be jointly maintained by Community College and particular training unit
- The Faculty Members will periodically monitor the students by visiting the industrial units where they are placed for Hands on Experience
- The students are required to maintain and submit the Daily Activity Dairy, On-Job Training (OJT) Report on Work done during Training
- These Reports and Viva-voce form the basis for the assessment at the end of the semester for this Course

FIRST SEMESTER INTERNSHIP REPORT

NAME :
REG NO :
INTERNSHIP PLACE :

50 Marks

1. Attendance : /10
   (Please give no of days present)
2. Record Work : /10

S.No	Conduct	Result
1	Interest to learn	Fair /Good /Excellent
2	General Conduct	Fair /Good /Excellent
3	Work Efficiency	Fair /Good /Excellent
4	Team work	Fair /Good /Excellent
5	Communication	Fair /Good /Excellent

Signature with Seal

COURSE – 6: TROUBLE SHOOTING AND OVERHAULING
Course Code -21TWMV0206 Credits: Theory – 3; Practical - 3 Marks-100

Objectives: The course aims to provide knowledge repairing and servicing Two-Wheelers and also its functions, break-down, overhauling and trouble shooting.

Unit I – Basic Checkup & Service
Job card - Pre delivery inspection – Periodical maintenance service – washing and drying – Checking Tire pressure –Free play & its operation - light, switch operation, air filter cleaning, inspecting- replacement – Fuel cock– sparkplug inspecting and cleaning –Wheel Balancing and Wheel Bearing - Final Inspection – Pollution norms.

Unit II – Trouble shoot of minor problems
Lock set replacement - Engine oil replacing - oil filter –- Engine lubrication and oil circulation – servicing of carburetor & its components – Idle RPM - Fuel consumption - Rich, Lean & stoichiometric ratio - Rear shock absorber replacement – Brake light switch - Swing arm lubrication - Fasteners and Torquening - General checkup for noise and leakage - Polishing.

Unit III – Trouble shoot of major problems
Steering bearing lubrication, replacing – TFF servicing and oil replacement - Engine troubleshooting – Fuel pump - Conventional chain and sealed chain slackness, cleaning and lubrication. Brake hose – Brake fluid – Replace master cylinder & its caliper – Brake shoe and Brake pads replacing – Fuel pump pressure checking –- Road test

Unit IV – Bike Engine Overhauling
Removing Seized engine – Dismantle Engine, clutch, Gearbox– Cleaning and inspecting the parts - Bore - Valve seating - Piston rings – Piston rings end gap - Connecting rod - Crankshaft bearing replacement - Timing chain replacement - Inspection and assembling all the parts - Valve Timing Diagram

Unit V - Scooter Engine Overhauling
Removing Seized engine – Dismantle Engine, CVT, Transmission – Cleaning and inspecting the parts - Bore - Valve seating - Piston rings – Piston rings end gap - Connecting rod - Crankshaft bearing replacement - Timing chain replacement - Inspection and assembling all the parts.

Reference Books

1. Basic Automotive Service [2 & 3 wheeler], 2010, NIMI, Government of India Chennai
2. Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada
3. Barry Hollembeak, 2011, Automotive Electricity and Electronics Classroom and Shop Manual, Pack Today Technician Publishing, USA
4. Tom Denton, 2004, Automotive Electrical and Electronic System, ELSEVIER,UK
5. Service Manuals of Manufacturers of Indian Two & Three wheelers.

COURSE– 7 ASSEMBLIES AND AUTO-ELECTRICAL

Course Code -21TWMV0207 Credits: Theory – 3; Practicals – 3 Marks-100

Objectives: The course aims at introducing the basic knowledge of auto-electrical system. Provide opportunity to learn servicing by hands-on-experience in the industrial setting through electrical instruments.

Unit I – Basic Electricals

Electron - Current, Voltage, Resistance and measuring instruments – ohms law – watts law – Magnetic field – Electromagnetic force - Conductor – Semi Conductor – Insulator.

Unit II – Checkup of Battery, Switches & Electrical Components

Battery & its types – Battery Charging & Testing — Fuse – Switches checkup –Components checkup – Head lamp, Tail lamp, Horn, Indicator, Starting motor , Starting relay, Ignition coil, Charging coil, R.R Unit, CDI, TCI, Cut off relay, Instrumental Display.

Unit III –FI Sensors & Actuators

FI - Crankshaft position sensor, Inlet Air Pressure, Inlet Air Temperature, Throttle Position Sensor, Oxygen sensor, Engine temperature sensor, Lean angle sensor, Wheel speed sensor, Side stand sensor – ECU - Injector, Malfunction indication lamp, Radiator fan and FID- Error codes of sensors and Actuators.

Unit IV – Electrical Circuits

Parallel and Series connection- Ignition circuit– single relay starting circuit and Double relay starting circuit – Signaling circuit– Lighting circuit – Charging circuit -ABS Hydraulic unit and its circuit – Cooling system wiring connections

Unit V – E – Bike

Basic needs of E Bike - Major Wiring circuit - Wheel hub Motor– Controller and 12V Convertor – Hall sensor - Bluetooth device connection – Application usage of connected interface – safety precautions – electrical parts maintenance

Reference Books

1. G.B.S. Narang, 2003, Automobile Engineering", 10th Reprint, Khanna Publishers, New Delhi.
2. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India Chennai
3. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
4. Richard Stone and Jeffry K. Ball, 2004, Automobile Engineering Fundamentals, SAE International, Warredale. Pa.USA.
5. George Lear and Lynn S. Mosher 1977, Motorcycle Mechanics, PRENTICE-HALL INC. New Jersey
6. "Silver Electrical" –Book provided by YAMAHA Motors private Limited.,
7. Electrical Service Manuals of Electric Bike Manufacturers of Indian Two wheelers.

COURSE – 8: INDUSTRIAL PLACEMENT PROGRAMME (IIP) FOR HANDS-ON-TRAINING

Course Code -21TWMV0208 Credit: Practical - 18 Marks-100

Objective

To provide practical training in the industrial environment to the students and create opportunity to gain Hands-on-Experience.

Strategies and Process adopted in the Training Process

- The students will be placed in the identified Two Wheeler Workshops for practical training and create opportunities for gaining Hands-on-Experience
- The Training will be for 60 days during the end second semester (60 days x 8 hours = 480 hours in the practical training)
- Attendance will be jointly maintained by Community College and particular training unit
- The Faculty Members will periodically monitor the students by visiting the industrial units where they are placed for Hands on Experience
- The students are required to maintain and submit the Daily Activity Dairy
- Record Work Book for the daily work done
- Daily Dairy, Record Work Book, Practicals and Viva-voce form the basis for the assessment at the end of the semester
- The Practical Examination will be conducted only on return from the INDUSTRIAL PLACEMENT PROGRAMME at the end of the semester
- However, the Theory examination will be conducted as and when the End Semester Examination (ESE) for Even Semester will be scheduled for other programmes

The students need to get exposed to the following:

- Two wheeler chassis frame.
- Two wheeler SI Engine
- Two wheeler CI Engine.
- Valve timing and port timing diagram
- Brake and Clutch adjustment as per specification.
- Dismantling and assembling of two wheeler engine.
- Dismantling and assembling of two wheeler gear box.
- Two wheeler chain test.
- Two wheeler electrical systems.

10. LIST OF ASSETS

S. No	Type of Asset	Quantity
1	Motorcycle/Scooter with YTS	
a	Ch.No. ME15TS0FZ29000020 (YBR) Blue & Red	1
b	ME1RG0S24P0000104 (SZ-R) Red	1
c	ME1RG0712E0000124 (FZ V 2.0) Red	1
d	ME11CK0SAC2000102 (R15) Green	1
e	ME11GCO15C2000259 (RAY) Pink	1
f	ME11GCO15C2000245 (RAY) White	1
2	FI Station	1
3	Motorcycle Cut Model	
a	ME1RG0722E0000107 (FZ-S Black & Green)	1
4	Dummy Engine Cut Model	
a	20P1-000047 (R15 Cut Section)	1
5	Fuel Injector Cleaner M/C	1
6	Fuel Line Pressure Tester	1
7	2nd Generation Tools	1
8	Ist Generation Tools	1
9	Electrical wiring Board x6Nos	1 set
10	Tachometer	1
11	Multi Meter - Mastech	4
12	Torque Wrench	
a	Torque Wrench (5-25 LBFT)	1
b	Torque Wrench (20-100 LBFT)	1
c	Torque Wrench (40-160 LBFT)	1
13	COMRESSION GAUGE WITH ADEPTER - Imported	4
14	TYRE PRESSURE GAUGE - IMPORTED	4
15	LED TORCH - Every Ready	4
16	RULER 12" - Stainles Steel	4
17	Protective Covers for Scooter & Motorcycle	
a	Protective Covers R15 Old (Full Seat)	2
b	Protective Covers R15 New (Split Seat)	2

c	Protective Covers Ray	2
d	Protective Covers Gladiator	2
e	Protective Covers SZ	2
f	Protective Covers FZ	2
18	Special Service Tools For New Dealer(Refer list no 1- 2)	1
19	General Tool Kit (Refer List No 1-3 General Tools)	4
20	Allen Key Set (Refer list No 1- 4)	4

11. WORKSHOP EQUIPMENTS & GENERAL TOOLS

S. No	WORKSHOP EQUIPMENTS	QUANTITY
1	Hydraulic Scissor type bike lift	4
2	Front Wheel Locking Vice (New Design)	4
3	Hydraulic Power Pack With Canopy And Solenoid Valve Control (1:4)	1
4	Hydraulic Accessories :- Tubing,Fittings,Hose Pipes,Clamps,Etc.	4
5	Work Station Panel Board With Logo & Tool Box	4
6	CBU Tools Trolley (New Design with 5 Drawer)	4
7	Insert For CBU Trolley	4
8	Chain Cum Filter Cleaner Made Of S.S.	1
9	Spark Plug Cleaner & Tester	1
10	Impact Wrench (I.R. Make)	4
11	Socket & Bits Set For Impact Wrench	4
12	Filter Regulator Lubricator (F.R.L.)	4
13	Quick Release Coupler (Qrc)	8
14	P.U. Coiled Hose For Impact Wrench	4
15	P.U. Coiled Hose With Blow Gun	4
16	Tyre In / De Flator Gauge (Digital Automatic)	1
17	Special Service Tool Board Back On Table (Size:- 6x3) + Standard Board	2
18	Part Rack (MS Tube)	3
19	Bench Grander	1
20	Bench Vice 6"	1
21	3 HP Air Compressor	1
22	Washing Unit Motor	1
23	Table 3X6	3
24	Work Table With Aluminum Checkered Sheet On Top & Inside	1
25	Pneumatic Line From Air Compressor To All Equipments	6
26	Engine Revolving Stand (For Cut section Engine)	1
27	Trolley For Battery Charger	1
28	Trolley For Inject Cleaner Machine	1
29	Trolley For Wheel Balancer With Drawer	1
30	Centre Stand	2

31	Allen key Set With Stand	4
32	Wooden Plunk	4
33	Red Tray (Make: Neel Kamal, Model Number (CC43120-NA)	6
34	Measuring Jug	4
35	Oil Can	4
36	Funnel	4
37	Bucket (Red & Green)	2
38	Sponge (Red & Green)	4
39	Grease (Make: Skf)	1
40	Battery charger 2 channel with load tester	1
41	Water Bottle (For Battery)	3
42	Stands For Electrical wiring Boards	2
43	Aluminum Checkered Sheet 1Foot / 1Foot	20
44	**Allen key sets**	
a)	Allenkey-2.5mm	4
b)	Allenkey-3mm	4
c)	Allenkey-4mm	4
d)	Allenkey-5mm	4
e)	Allenkey-6mm	4
f)	Allenkey-8mm	4
g)	Allenkey-10mm	4
h)	Allenkey-12mm	4
i)	Allenkey-14mm	4
j)	Stand For Allen key	4
45	**Special Tools**	
1.	Piston Pin Replacer	1
2.	T-Handle	1
3.	T-Handle	1
4.	Rear Shock Absorber Adjuster	1
5.	Clutch Hub Holder	1
6.	Spanner - Speedometer Gear Nut	1
7.	Crank Case Separator	1
8.	Crank Case Installer	1

9.	Base For YSST - 266	1
10	TFF Oil Seal Remover	1
11	TFF Oil Seal Installation Tool	1
12	New Magneto Holder	1
13	Valve Spring Compressor	1
14	Valve Spring Compressor Attachment	1
15	Piston Base	1
16	Piston Pin Replacer	1
17	Rocker Arm Shaft Puller M8	1
18	Small Screw Driver	1
19	Torx Bit (T-30)	1
20	Main Switch Steering Lock (T-30)	1
21	Scraper	1
22	Feeler Gauge (0.08, 0.10)	1
23	Cup - A	1
24	Cup - B	1
25	Cup - C	1
26	Cup - D	1
27	Oil Seal Installing Tool	1
28	Bearing Puller 6201	1
29	Bearing Puller 6202	1
30	Bearing Puller 6203	1
31	Center Plug Spanner	1
32	Upper & Lower Face Installer	1
33	New Magneto Holder	1
34	New Magneto Puller	1
35	Spokes Bit	1
36	Fixing Tool Bearing Steering Lower	1
37	Magneto Holder M8X80	1
38	Magneto Puller M16, 30	1
39	Tappet Screw Holder	1
40	Tappet Adjusting Socket Hex 8	1
41	T-Handle (Hex 19)	1

42	Feeler Gauge (0.10, 0.20)	1
43	Socket Steering Nut	1
44	Mechanical Seal / Bearing Installer	1
45	Water Pump Bearing Remover	1
46	Clutch Hub Holder	1
47	Drive Chain Cutting & Riveting Tool	1
48	Rim Tape Installing Tool	1
49	Tubeless Tyre Puncture Kit	1
50	Holder Puller Chain	1
51	TFF Oil Seal Installation Tool	1
52	Co Checking Adopter	1
53	Magneto Holder Universal R60	1
54	Tappet Adjusting Socket Hex 10	1
55	T-Handle (Hex 28)	1
56	Feeler Gauge (0.08, 0.12)	1
57	Rear Shock Absorber Adjuster	1
58	Bearing Puller	1
59	Fixing Tool Bearing Steering Lower	1
60	TFF Oil Seal Installation Tool	1
61	Starter Cable Nut Spanner	1
62	Rear Shock Absorber Adjuster	1
63	Disc Brake Face Out	1
64	Plate Bearing Installer	1
65	Bush	1
66	Bearing Punch Set	1
67	Lower Bearing Inner Race Installer	1
68	Clutch Spring Compressor	1
69	Clutch Carrier Nut Socket	1
70	Steering Nut Socket	1
71	Clutch Housing Holder	1
72	Cam Sprocket Holder	1
73	Spark Plug Spanner	1
74	Kick Spring Installer	1

75.	Steering C - Spanner	1
76.	Magneto Puller	1
77.	Crankshaft Cap	1
78.	Kick Shaft Oil Seal Punch	1
79.	Starter Cable Nut Spanner	1
80.	Rotor Holder Tool	1
81.	Adopter For Valve Spring Compressor	1
82.	Wheel Axle Bearing Installer Puller	1
83.	Wheel Axle Seal Punch	1
84.	Clutch Cover Bearing Remover	1
85.	Funnel With Long Tail	1
86.	Crankshaft Installer	1
87.	T-Handle Front Fork Top Plug Spanner	1
88.	Pilot Driver	1
89.	Engine Stand	1
90.	Special Pliers	1
91.	Wheel Balancer	1
92.	Wooden Plunk	1
46	**GENERAL TOOLS**	
1.	Double End Spanner (6 To 32mm)	40
2.	Ring Spanner (6 To 32mm)	40
3.	Combination Spanner (8,10,12,14,17mm)	20
4.	Screw Driver (7 Pc.)	4
5.	Combination Pliers	4
6.	Nose Pliers	4
7.	Cutter Pliers	4
8.	Lock Pliers (Inner)	4
9.	Lock Pliers (Outer)	4
10.	Adjustable Pliers	4
11.	Hammer 200Gm.	4
12.	Hammer 500Gm.	4
13.	Hammer Nylon 30Mm	4
14.	T-Handle (8,10,12)	12

15	Socket (8 To 32Mm)	88
16	Deep Socket 16Mm	4
17	Offset handle	4
18	Ratchet Handle	4
19	Extension 10"	4
20	Extension 5"	4
21	Universal Joint	4
22	File 8" Round With Handle	4
23	File 8" Half Round With Handle	4
24	File 8" Flat With Handle	4
25	Allen Key Set Up to 10mm	4
26	Chisel 8"	4
27	Centre Punch	4
28	Spark Plug Gauge	4

12. FORMAT FOR INTERNAL ASSESSMENT

Name of the Candidate		Register No	
Candidate Father Name			
Address			
Name & Address of the Internship place			
Semester		Date of Assessment	

Theory (40)	Internship Report (10)	Record Notebook (10)	Attendance (10)	Practicals (30)	Viva - Voce (10)	**Total Marks (100)**

13. CERTIFICATE DETAILS

Those who had completed one year Diploma in Two Wheeler Mechanism and Maintenance offered by DDU-KK (Community college) will get the certificate from Gandhigram Rural Institute – Deemed to be University.

Serial No.13246

Register No.17010007

THE GANDHIGRAM RURAL INSTITUTE

(Deemed to be University)

Estd. u/s 3 of the UGC Act and Administered by Ministry of Human Resource Development, Govt. of India
Accredited by NAAC with 'A' Grade (3rd Cycle)

On the recommendation of the Board of Management hereby confers on

MURUGAPANDI.D

[Son of DEVARAJ.T and KAMATCHI.D]

DIPLOMA (TWO WHEELER MECHANISM AND MAINTENANCE)

for having qualified for the Diploma by securing

First Class in the examination held in April 2018

Given this day the Thirteenth of September 2019.

Given under the Seal of the Institute

SEAL

Gandhigram - 624 302
Tamil Nadu
Date: 13.09.2019

Controller of Examinations | Registrar | Vice-Chancell

SAMPLE CERTIFICATE