

1	Name of Course	CC in Automobile Electronics Assistant (301123)																																								
2	Max.Nos. of Student	25 Students																																								
3	Duration	6 Months																																								
4	Type	Full Time																																								
5	Nos Of Days / Week	6 Days																																								
6	Nos Of Hours /Days	7 Hrs																																								
7	Space Required	Laboratory = 1000 Sq feet Class Room = 200 Sq feet TOTAL = 1200 Sq feet																																								
8	Entry Qualification	S.S.C. + Any Course of Electronics Group of MSBVE																																								
9	Objective Of Syllabus/ introduction	Awareness of Safety precautions. Knowledge of soldering techniques, Testing, use of tools in assembly. Application of Electronic / Electrical components used in Automobile Electronics. Ability to read schematic layouts wrings diagrams. Repair & Maintenance of various electronics circuit used in Automobile Electronics																																								
10	Employment Opportunity	The trainee will either to be able to take up jobs with agencies which maintain and repair such equipments or with working experience will be in a position to start his own independent Business.																																								
11	Teacher’s Qualification	Diploma in Electronics Engineering.																																								
12	Training System	Training System Per Week <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>12 Hours</td><td>30 Hours</td><td>42 Hours</td></tr></table>						Theory	Practical	Total	12 Hours	30 Hours	42 Hours																													
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SYLLABUS

Automobile Electronics Assistant

Practical - II	Theory - I
Familiarise with the hand tools.	Hand tools, various tools;and their specific uses.
Identify and familiarise with different engines.	Automobile engine -IC engines, two stroke, 4 stroke diesel and petrol engines.
Familiarise with the internal parts and working of a carburetor and Fuel pump.	Functions of carburetor - atomization , speed control of petrol engine, idle speed and max. speed . Fuel pump used in diesel engines. Speed control of Diesel engines.
Familiarise with the petrol engine parts and its working	Multi cylinder petrol engines - firing order, power development, speed governing methods used in petrol engines.
Familiarise with the diesel engine parts and its working	Multi cylinder diesel engines - firing order, power development, speed governing methods used in diesel engines.
Testing of alternator/dynamo, rectify the faults in rectifier circuits.	Auto alternator/Dynamo - its working principle, advantages of alternator, rectifier circuits.
Trace wiring circuit, head light circuit, parking light, panel instrument, fog light circuit	Description of the wiring circuit, head light circuit, parking light, penal instrument, fog light circuit
Trace brake, tail and reverse light, flasher light, disassembling & assembling and testing of horn	Description of brake, tail and reverse light, flasher light, working, assembling/disassembling and testing of horn
Disassemble wiper motor, central lock and power window, flywheel magneto and test for proper function	Working of wiper motor, central lock and power window, flywheel magneto
Trace the locations, circuits and disassemble/re-assemble the Solenoid switches, panel meters, fuel and temperature gauges	Working of Solenoid switches, panel meters, fuel and temperature gauges
Test and rectify the fault in electronic ignition systems.	Electronic ignition system, capacitor discharge type, thyristor type, contact less ignition systems. Spark gap, adjustment of point gap, spark advance mechanism, centrifugal advance mechanism, vacuum advance mechanism.
Testing the microcontroller, circuit components and accessories. Tracing the location of sensors, actuators and transducers and test for proper function	Introduction to Microcontrollers ,architecture, interfacing , functioning & its application in auto control, Familiarise with
	The interfacing circuits, Sensors and Transducers
Test and the various pressure sensors for their proper working.	MPFI system, principle of working, and its functions. Sensors used for Barometric pressure, Vacuum pressure, air temp. and Coolant temp.
Test the sensors of Vehicle speed, throttle position, crank shaft position for their proper function.	Sensors used for Vehicle speed, throttle position, crank shaft position.

Test the ECM and other connection for the proper function and performance.	ECM - Working of ECM, sensors attached with ECM, testing procedure of ECM
Test the antilock brake system and its associated circuits.	Antilock braking system - principle and working. Devices connected in the braking system, safety devices.
Test and repair the power windows.	Power window - motors and switches used for the power window. Protective devices used along with the motors.
Test the power steering circuit and devices.	Power steering. Steering technique - Power steering circuit and its devices - their working and testing procedure.
Fault finding in trafficators.	Trafficators - devices and circuits of trafficators, their connection.
Installation of Car radio, stereo, mobile charger etc. .	Car radio - noise suppression system, antenna, car stereo, their connections, car tv, mobile charger and other accessories -their connection.
Familiarise with the connections of electronic door locking systems.	Electronic door locking system, its installation and its working principle. Remote key system.
Trace and rectify the faults in the indicator circuits.	Indicators - temperature, fuel, RPM their principle and working.

Practical: - I - Basic Electronics & Assembly Technique

Practical - I
Tool Identification, safety precautions, Familiarization with Electronic Components. Different Type of Soldering Iron. Use of Soldering Iron. Color Code of Fixed Resistors.
Use of various Meters for Measuring Voltage, Current , Resistance etc. Safe Handling of Instruments . Use of Digital & Analog Multimeter. Familiarization with CRO. Measurement of L,C and R using LCR bridge.
Identification & Testing of various types of Diodes. Familiarization with CRO, Operating knobs. Construction of Half Wave & Full Wave Rectifiers. Calculation of Ripple using Filters to improve DC Output
Transistor Testing, study the transistor characteristics. Construction of single stage amplifier. Construction of a transistor- switch and to drive a relay.
Construction of RC Phase Shift Oscillator. Construction of Astable and Bistable multivibrator.
Plotting of V-I Characteristics of SCR/Triac, study of light Dimmer.
Lab Demonstration of all types of Digital Logic Gates. Verification of all truth table. Familiarization with various IC and their Packages.

Tools & Equipment :-

Sr No	Description of Item	Qty
1.	Rule Steel 300mm	4
2.	Chisel cross cut 200mm x 6mm	4
3.	Hammer Ball Peen 0.5 Kg	4
4.	Hammer copper 1 kg. with handle	4
5.	Hack saw frame for 30 cm blade	4
6.	Hand Vice 37mm	4
7.	Screw Driver, Electrician type 15cm size	8
8.	File flat 35 cm bastard	4
9.	File flat 25cm second cut	4
10.	Soldering iron 120 watts	2
11.	Clip on Meter Digital	2
12.	Steel Almirah 180 x 90 x 50 cm	2
13.	Tachometer	2
14.	Tester sparking plug "NEON" Type	2
15.	High rate discharge tester	2
16.	Battery charger	2
17.	Multimeter digital	4
18.	AC alternator slip ring puller	2
19.	AC alternator slip ring press tool	2
20.	Executive Auto Electrical Tool kit	4
21.	Distributor tester	4
22.	Electrical test bench	4
23.	Alternator regulator tester	4
24.	Car stereo	2
25.	Hydrometer	2
26.	Vehicle Euro 2 & 3	1 each
27.	Engine scanner	
28.	2 stroke & 4 Stroke petrol engine	1 each
29.	2 stroke & 4 stroke Diesel engine	1 each
30.	Multi Cylinder Petrol engine	
31.	Multi Cylinder diesel engine	
32.	MPFI system	
33.	Car Radio and stereo system	
34.	Car locking remote system	
35.	P IV Computer system	4