

Program : Diploma in Automobile Engineering	
Course Code : 5057	Course Title: Vehicle Testing Lab
Semester : 5	Credits: 1.5
Course Category: Program Core	
Periods per week: 3 (L:0, T:0, P:3)	Periods per semester: 45

Course Objectives:

- To acquire sufficient knowledge about the advanced components and systems in automobile engineering with their diagnoses & rectification.

Course Prerequisites:

Topic	Course code	Course name	Semester
Engine fuel System		Basic Automobile Engineering	2
Steering Geometry		Automotive Chassis and Transmission	4
Vehicle Service		Automobile Service Lab-I	2
Engine Testing		Heat power Engineering Lab	4

Course Outcomes:

On completion of the course, the student will be able to

CO _n	Description	Duration (Hours)	Cognitive level
CO1	Experiment with servo and air brake system.	12	Applying
CO2	Make use of the Servicing and troubleshooting procedure on turbo charger, intercooler and Automobile Air conditioning system.	12	Applying
CO3	Experiment with MPFI sensors, fuel injection pump , Smoke meter and Exhaust gas analyser.	10	Applying
CO4	Make use of Wheel balancing machine, Computerized wheel alignment machine, Automatic Tyre changer and Head light aiming tool.	8	Applying
	Lab Exam	3	

CO – PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3			3		2	2
CO2	3			3		2	2
CO3	3			3			
CO4	3			3			

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	Experiment with Servicing and troubleshooting of servo and air brake system and their components.		
M1.01	Identify the Tools and Equipment used in Vehicle Testing Lab	2	Applying
M1.02	Experiment with servicing of servo brake system and prepare the detailed trouble shooting chart	4	Applying
M1.03	Make use of air brake system components such as brake valve, unloader valve, brake chamber and prepare the detailed trouble shooting chart	6	Applying
CO2	Make use of the Servicing and troubleshooting procedure on turbo charger, intercooler and Automobile Air conditioning system		
M2.01	Experiment with Servicing and troubleshooting of turbo charger, Inter cooler and prepare a detailed trouble shooting chart.	3	Applying
M2.02	Experiment with servicing of automobile air conditioning system compressor, condenser and evaporator.	6	Applying
M2.03	Experiment with leak test in AC system and do refilling of refrigerants and prepare the detailed trouble shooting chart for car AC system.	3	Applying
	Lab exam- I	1.5	
CO3	Experiment with MPFI sensors, fuel injection pump, Smoke meter and Exhaust gas analyzer.		
M3.01	Identify the various MPFI sensors and test them using Engine analyzer.	3	Applying

M3.02	Experiment with various testing and adjustments in fuel injection pump using FIP calibration unit	3	Applying
M3.03	Experiment with the Smoke test on Diesel vehicle.	2	Applying
M3.04	Make use of Exhaust gas analysis on Petrol vehicle.	2	Applying
CO4	Make use of Wheel balancing machine, Computerized wheel alignment machine, Automatic Tyre changer and Head light aiming tool		
M4.01	Make use of Tyre changing procedure on pneumatic tyre changer.	1	Applying
M4.02	Make use of wheel balancing procedure.	1	Applying
M4.03	Experiment with computerized wheel alignment.	2	Applying
M4.04	Utilize measuring of turning circle radius of two, three and four wheelers.	2	Applying
M4.05	Organize driving practice on Vehicles. (drive and test the vehicle)	2	Applying
	Open Ended Projects **		Applying
	Lab Exam – II	1.5	

**** - Suggested Open Ended Projects**

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can do open ended experiments as a group of 2-3. There is no duplication in experiments between groups.

1. Organize Data collection on modern vehicle testing tools/equipments.
2. Make use of Dismantling and assembling procedure on tyres with different tyre size.
3. Select wheel alignments of various four wheelers.
4. Utilize Brake adjustments of different four wheelers.
5. Identify the causes of low cooling effect by the given Car Air Conditioning system.

Text /Reference:

T/R	Book title/Author
T1	Automobile Engineering Practical / N. Malhotra
R1	Automotive Technology: Principles, Diagnosis, and Service by James D. Halderman, Prentice Hall
R2	Automotive Technology: A Systems Approach by Jack Erjavec, Cengage Learning
R3	Automotive mechanics by William H. Crouse and Donald L. Anglin
R4	Automotive Service: Inspection, Maintenance, Repair by Tim Gilles

Online Resources:

Sl.No	Website/Link
1	https://www.youtube.com/watch?v=wbTUvp-tD5M
2	https://www.youtube.com/watch?v=M2AnK8Q90Lo
3	https://www.youtube.com/watch?v=6JD1MQRT5AQ
4	https://www.youtube.com/watch?v=nhfVqRcx0KI
5	https://www.youtube.com/watch?v=0b2bnvI9HWA
6	https://www.youtube.com/watch?v=dM4zUa9-Ib4
7	https://www.youtube.com/watch?v=jg7g-ycucMo
8	https://www.youtube.com/watch?v=7d2K_mKgsZ0
9	https://www.youtube.com/watch?v=ni6-NhH6uAE&feature=youtu.be