Program: **Diploma in Automobile Engineering**	
Course Code: **6057**	Course Title: **Advanced Vehicle Testing Lab**
Semester: **6**	Credits: **2.5**
Course Category: **Program Core**	
Periods per week: **4 (L:0, T:1, P:3)**	Periods per semester: **60**

Course Objectives:

- To impart skills of fault finding and rectification of vehicle systems for students in a systematic way.
- To process information regarding diagnostic methods and apply it on real vehicles.
- To perform both drive test and shop test.

Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge about vehicle systems and service procedures		Internal Combustion Engines.	3
		Automobile Electrical and Electronic Systems	3
		Automotive Chassis and Transmission	4
		Vehicle Diagnostics and Service	5

Course Outcomes:

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

COn	Description	Duration (Hours)	Cognitive Level
CO1	Make use of vehicle diagnostics process flow	7	Applying
CO2	Apply engine system diagnostics	20	Applying
CO3	Make use of chassis system diagnostics	15	Applying
CO4	Utilize electrical system diagnostics	15	Applying
	Lab Exam	3	

CO – PO Mapping:

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

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

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Make use of vehicle diagnostics process flow**		
M1.01	Make use of mechanical and electrical diagnostic techniques	3	Applying
M1.02	Identify tools and equipment used for vehicle diagnostics	4	Applying
CO2	**Apply engine system diagnostics**		
M2.01	Utilize compression tester and cylinder leakage tester for engine diagnosis	3	Applying
M2.03	Apply fuel pressure testing using fuel pressure gauge	3	Applying
M2.04	Make use of ignition system diagnosis	3	Applying
M2.05	Experiment with fuel injection system	3	Applying
M2.06	Organize fault diagnosis of cooling and lubrication system	3	Applying
M2.07	Make use of starting system fault diagnosis	3	Applying
M2.08	Plan charging system fault diagnosis	2	Applying
	Lab Exam – I	1.5	
CO3	**Make use of chassis system diagnostics**		
M3.01	Apply testing procedure on brake system and diagnosis of ABS	3	Applying
M3.02	Make use of traction control system diagnosis	3	Applying
M3.03	Plan steering system diagnosis	3	Applying

M3.04	Utilize suspension system diagnosis	3	Applying
M3.05	Make use of transmission system diagnosis	3	Applying
CO4	**Utilize electrical system diagnostics**		
M4.01	Make use of lighting system diagnosis	3	Applying
M4.02	Utilize body electrical system diagnosis	2	Applying
M4.03	Plan instrumentation diagnosis	2	Applying
M4.04	Utilize HVAC diagnosis	3	Applying
M4.05	Make use of cruise control diagnosis	2	Applying
M4.06	Make use of supplement restraint system diagnosis	3	Applying
	Open-ended projects**		Applying
	Lab Exam – II	1.5	

Text / Reference:

T/R	Book Title/Author
T1	Advanced Automotive Fault Diagnosis, Automotive Technology: Vehicle Maintenance and Repair, Tom Denton, Routledge
R1	Automotive Technology: A Systems Approach by Jack Erjavec, Cengage Learning
R2	Automotive Technology: Principles, Diagnosis, and Service by James D. Halderman, Prentice Hall
R3	Automotive Suspension & Steering Systems (Classroom Shop Manuals), Don Knowles, Cengage learning
R4	Automotive Mechanics, Anglin And Crouse, McGraw-Hill

Online Resources:

Sl.No	Website Link
1	https://www.youtube.com/watch?v=ASTLnO1BI64
2	https://www.youtube.com/watch?v=3Fs7goQcYWk
3	https://www.youtube.com/watch?v=TFCN0QhKzo4

** - 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. Make use of tests to identify the electrical short circuit of the charging system.
2. Utilize tests to identify the condition of suspension of a vehicle having a rough ride.