Program : **Diploma in Automobile Engineering**	
Course Code : **2059**	Course Title: **Automobile Service Lab - I**
Semester : **2**	Credits: **No Credit**
Course Category: **Engineering Science**	
Periods per week: **3 (L:0, T:0, P:3)**	Periods per semester: **45**

Course Objectives:

- To provide hands on experience to students about basic hand tools used in automobile workshop.
- To identify different engine components, demonstrate basic experiments on engines, and understand the servicing procedure of automobiles.
- Designed to enhance the automotive servicing skills of students.

Course Prerequisites:

Topic	Course code	Course name	Semester
Basic knowledge of Physics		Applied Physics I	1

Course Outcomes:

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

COn	Description	Duration (Hours)	Cognitive Level
CO1	Demonstrate the use of different tools used in Automobile workshop	7	Applying
CO2	Identify the application of measuring tools and specific tools in Automobile Garage.	7	Applying
CO3	Identify various engine components in an Automobile after dismantling.	14	Applying
CO4	Apply the procedure of maintenance schedule on two and four-wheeler vehicles.	14	Applying
	Lab Exam	3	

CO- PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3			2			
CO2	3			2		2	2
CO3	3			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	**Demonstrate the application of different tools used in Automobile workshop**		
M1.01	Identify different tools used in automobile workshop and their application	4	Applying
M1.02	Make use of competency related to use of hand tools, measuring tools and special tools	3	Applying
CO2	**Identify the application of measuring tools and specific tools in Automobile garage.**		
M2.01	Make use of bore gauge to measure the bore of given Engine cylinder.	2	Applying
M2.02	Select the stroke length of the given Engine cylinder from crank radius.	2	Applying
M2.03	Experiment with the swept volume of an engine cylinder.	2	Applying
M2.04	Solve the compression ratio of the given Engine.	1	Applying
	Lab Exam-I	1.5	
CO3	**Identify various engine components in an Automobile after dismantling.**		
M3.01	Experiment with the Engine components - Cylinder block, cylinder liners – wet type and dry type, Cylinder head, cylinder head gasket, Pistons – types of pistons, Piston rings, – compression ring and oil ring, Gudgeon pin, Connecting rod.	7	Applying
M3.02	Make use of the engine components - Crank shaft, Main bearings, Fly wheel, Valves, Cam shaft drives.	7	Applying

CO4	**Apply the procedure of maintenance schedule on two and four-wheeler vehicles**		
M4.01	Identify the Engine oil, Coolant.	2	Applying
M4.02	Utilize the maintenance schedule of a two-wheeler and four-wheeler.	2	Applying
M4.03	Make use of the jacking up and removal of one wheel.	2	Applying
M4.04	Identify the major greasing points in a vehicle.	2	Applying
M4.05	Experiment with spark plug and setting the gap	2	Applying
M4.06	Apply the procedure of servicing and testing of spark plug.	2	Applying
M4.07	Experiment with fuel injector and setting injection pressure.	2	Applying
	Open Ended Experiments **		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) Build database from service manual and preparation of maintenance schedule chart.
2) Choose and show the industry set up of automobile workshop and make use of special purpose tools.
3) Utilize the specification chart of engine used in any of the modern vehicles.

Text / Reference:

T/R	Book Title/Author
T1	Basic automobile Engineering - C P Nakra - Dhanpat Rai publishing company
R2	Practical automobile Engineering – Malhotra - Asian Publishers
R3	Vehicle Maintenance and Garage Practice - Jigar A. Doshi, Dhruv U. Panchal, Jayesh P. Maniar - PHI Learning Pvt. Ltd.

Online Resources:

Sl.No	Website Link
1	https://www.carparts.com/blog/auto-mechanic-tools-equipment-list-27-tools-you-need-to-fix-cars-right/
2	https://www.youtube.com/watch?v=fw8Jfoif1BM
3	https://www.youtube.com/watch?v=HlkFYlzPuvo