

Program : Diploma in Automobile Engineering	
Course Code : 4057	Course Title: Diesel Engine Service Lab
Semester : 4	Credits: 1.5
Course Category: Program Core	
Periods per week: 3 (L:0, T:0, P:3)	Periods per semester: 45

Course Objectives:

- To train students to get an in-depth knowledge about diesel engine systems and components.
- To acquire skills regarding identification, dismantling, servicing and assembling of diesel engines and its components.

Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge about petrol engine components		Basic Automobile Engineering	2

Course Outcomes:

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

CO _n	Description	Duration (Hours)	Cognitive level
CO1	Apply the procedure of dismantling on diesel engines.	4	Applying
CO2	Make use of overhauling and servicing procedure on diesel engine components.	15	Applying
CO3	Utilize the servicing procedure on diesel engine fuel system components.	15	Applying
CO4	Experiment with diesel engine intake and exhaust systems.	8	Applying
	Lab Exam	3	

CO PO Mapping:

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

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

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	Apply the procedure of dismantling diesel engines.		
M1.01	Make use of diesel engine components	2	Applying
M1.02	Identify various diesel engine components and methods of reconditioning.	2	Applying
CO2	Make use of overhauling and servicing procedure on diesel engine components.		
M2.01	Apply the procedure of dismantling, inspection and assembling of diesel engine	4	Applying
M2.02	Experiment with (Removal, inspection and refitting) cylinder head.	2	Applying
M2.03	Utilize the inspection procedure on cylinder bore. (Ovality and taperness)	2	Applying
M2.04	Experiment with (dismantling, inspecting and assembling) valve assembly.	2	Applying
M2.05	Apply removal inspection and refitting procedure on piston, connecting rod, camshaft and crankshaft.	3	Applying
M2.06	Make use of valve tappet clearance adjustment procedure.	2	Applying
	Lab Exam – I	1.5	
CO3	Utilize the servicing procedure on diesel engine fuel system components		
M3.01	Organize the procedure of dismantling and assembling of fuel feed pump and filter.	2	Applying
M3.02	Plan the procedure of dismantling and assembling of Fuel Injection pump and set FI pump timing.	4	Applying

M3.03	Experiment with (Dismantling and assembling) fuel injector	3	Applying
M3.04	Choose various tests using Fuel injector tester.	3	Applying
M 3.05	Organize bleeding of diesel fuel system.	2	Applying
M 3.05	Identify the working of various components in electronic diesel fuel control system and its testing.	4	Applying
CO4	Experiment with diesel engine intake and exhaust systems.		
M 4.01	Make use of overhauling procedure on diesel air intake system and disassembly of EGR valve.	3	Applying
M 4.02	Experiment with turbochargers and superchargers.	3	Applying
M 4.03	Make use removal and inspection procedure on exhaust components like tail pipe, catalytic converter and muffler.	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. Plan FIP timing of a diesel engine and start the engine.
2. Apply engine compression tests and assess the condition of the diesel engine.

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	Maintenance of automotive engines – Tim Gilles -CENGAGE Learning
R4	Vehicle Maintenance and Garage Practice - Jigar A. Doshi, Dhruv U. Panchal, Jayesh P. Maniar - PHI Learning Pvt. Ltd.
R5	W. H. Crouse and Anglin - Automotive mechanics – Mc Graw Hill Education

Online Resources:

Sl.No	Website Link
1	https://www.youtube.com/watch?v=DZt5xU44IfQ
2	https://www.youtube.com/watch?v=eD2_2EQEKwQ
3	https://www.youtube.com/watch?v=u6-X2ZqJBOU