

AU-110: AUTOMOBILE LABORATORY

Course Title :	Automobile Laboratory	Course Code	AU-110
YEAR	I	Course Group	Core
Teaching Scheme in Periods (L:T:P)	0:0:3	Credits	2
Methodology	Lecture + Practicals	Total Contact Hours :	90 Periods
CIE	20+20+20=60 Marks	SEE	40 Marks

Pre requisites:

This course requires the basic knowledge of Basic Automobile Engineering and Automobile transmission system.

Course Content and Blue Print of Marks for SEE

Unit No	Unit name	Hours/ Periods	Questions for SEE			Marks weightage	%Weightage
			Handli ng	Manip ulation	Precis ion		
1.	Tools, gauges & safety precautions	3	10	10	20	40	100
2.	Demonstration of working of Two stroke, Four stroke petrol and diesel engines.	6	10	10	20	40	100
3.	Dismantling and assembling of an IC engine	6	10	10	20	40	100
4.	Dismantling and Assembling of a single plate clutch and multi plate clutch	3	10	10	20	40	100
5.	Dismantling and Assembling of Gear box	3	10	10	20	40	100
6.	Dismantling and assembling of Propeller shaft and Differential unit	3	10	10	20	40	100
7.	Dismantling and Assembling of Mechanical Fuel pump and Carburettor	3	10	10	20	40	100
8.	Fuel system of a multi cylinder engine	3	10	10	20	40	100
9.	Cooling System of a Multi Cylinder Engine	3	10	10	20	40	100
10.	Lubrication System of a	3	10	10	20	40	100

	Multi Cylinder Engine						
11.	Intake and Exhaust system of an IC engine	3	10	10	20	40	100
12.	Removal of wheels and tyres and refitting	3	10	10	20	40	100

Course Contents:

LIST OF EXPERIMENTS

1. Identification of different tools, gauges and various instruments and Safety precautions in automobile Laboratory.
2. Demonstrate the working principle of two stroke and four stroke engines (Petrol and Diesel) with the help of cut section model.
3. Dismantle a given I.C. Engine and identify various basic components such as Cylinder, Cylinder block, Cylinder heads, Piston, Piston rings, Connecting rod, Crank shaft, Valves and various Valve actuating mechanisms, Timing gears, Crankcase, Spark plug, Fuel pump, Carburetor, Fuel Injector, Fuel Injection pump.
4. Dismantling and Assembling of a single plate clutch and multi plate clutch.
5. Dismantling and Assembling of a gear box (synchro mesh and constant mesh).
6. Dismantling and Assembling of a Differential.
7. Dismantling and Assembling of AC mechanical fuel pump and Carburetor.
8. Demonstrate the fuel system of a multi cylinder engine with the aid of simulator.
9. Demonstrate the cooling system of a multi cylinder engine with the aid of a chart or simulator.
10. Demonstrate the lubrication system of a multi cylinder engine with the aid of a chart or simulator.
11. Demonstrate the Inlet and Exhaust system of a multi cylinder engine with the aid of a simulator.
12. Practice on removing and refitting of wheel from vehicle and identify tyre and disc specifications.

Course Outcomes:

CO1 :	Identify the tools and equipment used in automobile laboratory
CO2 :	Perform Dismantling and Assembling of the given Internal combustion engine as a group
CO3 :	Dismantle and Assemble of 1) Single plate Clutch, 2) Multi plate Clutch, 3) Constant mesh gear box and 4) Synchromesh gear box.
CO4 :	Manage the dismantling and assembling of 1) Mechanical fuel pump, 2) Carburettor, and 3) Differential
CO5:	Demonstrate the working procedure of 1.fuel supply, cooling, and 2. Lubrication 3. intake and exhaust system of an engine with the aid of simulators.
CO6:	Remove the Wheels and Tyres and refit.

The competencies and key competencies to be achieved by the student

S. No	Title of the Experiment	Key Competencies	Competencies
1	Identification of Tools, gauges, Instruments and Safety precautions in automobile Laboratory	a. Identify the tools required for a particular task. b. Identify the gauges required for a particular task and also able to identify the ranges. c. Identify the measuring Instrument required for a particular task. d. Identify various safety measures.	i. State different types of tools and their applications. ii. State different types of gauges. iii. State different types of measuring Instruments and also use of each instrument iv. State various safety devices and equipments.
2	Working principle of Two stroke and Four stroke (Petrol and Diesel) engines	Identify the engine parts in cut section model of petrol and diesel engines.	Appreciate the working principle of two stroke and four stroke petrol and diesel engines
3	IC engine Dismantling and assembling	1) Dismantle the engine from the vehicle 2) Disassemble the engine parts 3) Report on the condition 4) Assemble the engine 5) Check the running condition of engine	1) Identify the tools required for Dismantling. 2) Use Of appropriate tools dismantle the engine parts and keep the parts without damage in order. 3) Clean all the parts with appropriate tool / medium. 4) Assemble all the parts in order. 5) Check the running condition of the engine.

4	Dismantling and Assembling of a single plate clutch and multi plate clutch	1) Dismantle the component from the Vehicle. 2) Disassemble the component 3) Report on the condition 4) Assembling the component 5) Check the Running Condition of the component	1) Identify the tools required for Dismantling the component. 2) Use of appropriate tools to dismantle the component 3) Keep the dismantled parts without any damage in order 4) Clean all the parts with appropriate tool / medium 5) Assemble the component 6) Check and bring to the operating condition
5	Dismantling and Assembling of Gear box (Constant mesh and Synchromesh)	1) Dismantle the component from the Vehicle. 2) Disassemble the component 3) Report on the condition 4) Assembling the component 5) Check the Running Condition of the component	1) Identify the tools required for Dismantling the component. 2) Use of appropriate tools to dismantle the component 3) Keep the dismantled parts without any damage in order 4) Clean all the parts with appropriate tool / medium 5) Assemble the component 6) Check and bring to the operating condition
6	Dismantling and assembling of Differential	1) Dismantle the component from the Vehicle. 2) Disassemble the component 3) Report on the condition 4) Assembling the component 5) Check the Running Condition of the component	1) Identify the tools required for Dismantling the component. 2) Use of appropriate tools to dismantle the component 3) Keep the dismantled parts without any damage in order 4) Clean all the parts with appropriate tool / medium 5) Assemble the component 6) Check and bring to the operating condition
7	Dismantling and Assembling of AC Mechanical Fuel pump and Carburettor	1) Dismantle the component from the Vehicle. 2) Disassemble the component 3) Report on the condition 4) Assembling the component	1) Identify the tools required for Dismantling the component. 2) Use of appropriate tools to dismantle the

		5) Check the Running Condition of the component	component 3) Keep the dismantled parts without any damage in order 4) Clean all the parts with appropriate tool / medium 5) Assemble the component 6) Check and bring to the operating condition
8	Fuel system of a multi cylinder engine	1) Identify the components of a Fuel system. 2) Know the function of each component in the system.	1) Draw a line diagram of a fuel System of a given Multi Cylinder Engine
9	Cooling System of a Multi Cylinder Engine	1) Identify the components of cooling system. 2) Know the function of each component in the system	i. Draw a line diagram of a cooling System of a given Multi Cylinder Engine and label the parts. ii. Explain the function of each component
10	Lubrication System of a Multi Cylinder Engine .	1) Identify the components of cooling system. 2) Know the function of each component in the system	i. Draw a line diagram of a Lubrication system of a given multi cylinder engine.
11	Intake and Exhaust system of an IC engine	1) Understand the need of Inlet and Exhaust system 2) Know the function of each component in the system.	i. Draw a line diagram of Inlet and Exhaust system of a given multi cylinder engine.
12	Removal of wheels and tyres and refitting	1) Understand the need of wheels and tyres 2) Know the function of wheels and tyres	i. Use of appropriate tools and remove the wheels and tyres ii. Check the condition and refit.

CO PO Mapping Matrix

At the end of the course the student will have the ability to attain CO

Course Outcome		PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	Identify the tools and equipment used in automobile laboratory	3	2	2	3	2	3	1
CO2	Perform Dismantling and Assembling of the given Internal combustion engine as a group	3	3	2	3	1	3	2
CO3	Dismantle and Assemble of 1) Single plate Clutch, 2) Multi plate Clutch, 3) Constant mesh gear box and 4) Synchromesh gear box.	3	3	2	3	2	3	2
CO4	Manage the dismantling and assembling of 1) Mechanical fuel pump, 2) Carburettor, and 3) Differential	3	3	2	3	2	3	2
CO5	Demonstrate the working procedure of 1. Fuel supply, Cooling, 2. Lubrication 3. Intake and Exhaust system of an engine with the aid of simulators.	3	2	2	3	1	3	1
CO6	Remove the Wheels and Tyres and refit.	3	2	2	4	1	3	1

Model Question Paper
C-26, Diploma in Automobile Engineering,
AU-110: Automobile Lab
Mid Sem -1 / Mid Sem-2 / Semester End Examination

Time: 3 Hour

Total Marks: 20 / 20 / 40

Note:

- i. Answer any **one** of the following.
- ii. Use lottery system for allocation of the experiment for the examination.

1. Identification of different tools, gauges and various instruments and Safety precautions in automobile Laboratory.
2. Demonstrate the working principle of two stroke and four stroke (petrol and diesel) engines using the cut model.
3. Dismantle a given IC engine and identify the basic components such as Cylinder, Cylinder block, Cylinder head, Piston, Piston rings, Connecting rod, Crank shaft, Valves, Valve actuating mechanism, Timing gears, Crankcase, Spark plug, Fuel pump, Carburetors, Fuel Injector, Fuel Injection pump.
4. Dismantling and Assembling of a given single plate clutch and multi plate clutch.
5. Dismantling and Assembling of Constant mesh and Synchromesh gear box.
6. Dismantling and Assembling of a given Differential unit.
7. Dismantling and Assembling of A.C. Mechanical fuel pump, and a given Carburetor.
8. Demonstrate the fuel system of a multi cylinder engine with the aid of a chart.
9. Demonstrate the cooling system of a multi cylinder engine with the aid of a simulator.
10. Demonstrate the Lubrication system of a multi cylinder engine with the aid of a simulator.
11. Demonstrate the Inlet and Exhaust system of a multi cylinder engine with the aid of a simulator.
12. Remove the wheels and tyres of a given vehicle and refit them.