G. S. Mandal's

MARATHWADA INSTITUTE OF TECHNOLOGY, AURANGABAD

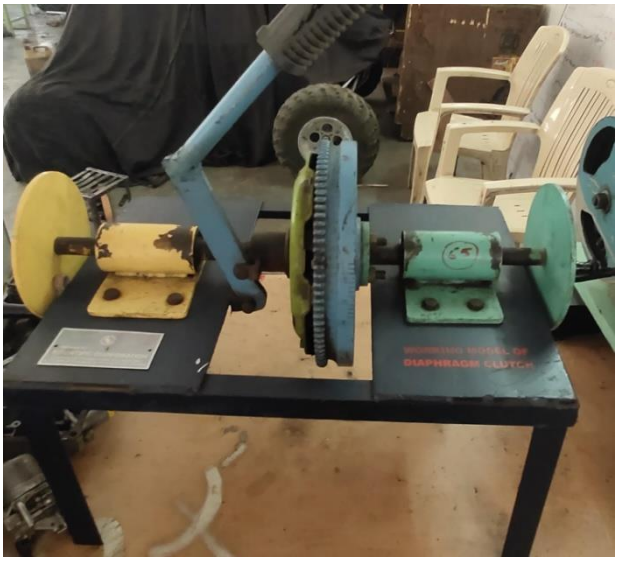
DEPARTMENT OF MECHANICAL ENGINEERING

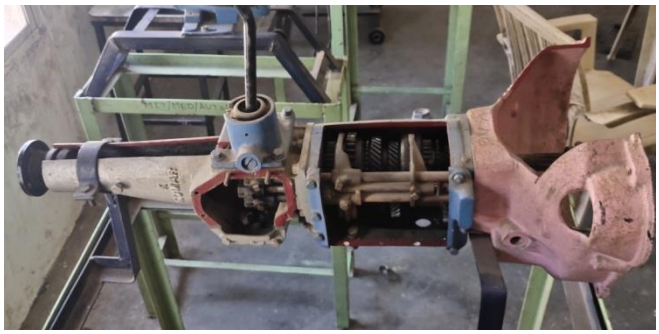
Laboratory Name and Location: Automobile Engineering (Central Workshop)

Lab In-charge: Mr. Avinash V. Gadekar (Asst. Professor)

Lab Area: 85.67 sq.m. **Total Investment (INR):** Rs.3,44,156/-

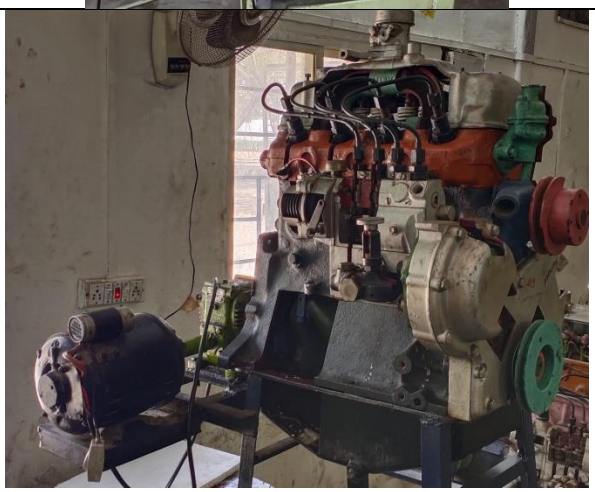
List of Major Equipments:

Sr. No.	Name & Specifications of the Equipment	Photograph of the Equipment
1.	Single plate coil spring clutch	
2	Single plate diaphragm spring clutch	

3	Disassembly of clutches (Single plate coil spring type, single plate diaphragm spring type and multiplate type)	
4	Cut sectional view of Synchromesh gear box	

5	Hydraulic braking system with internal expanding drum and master cylinder	
6	Cut sectional view of differential and rear axle assembly	

7	Working model Ignition system of 4 stroke cylinder petrol engine	
8	Assembly of distributer and ignition coil	

9	Cut sectional model of 4 Stroke 6 cylinder diesel engine	
10	Cut sectional model of 4 Stroke 4 cylinder petrol engine (Motor drive)	
11	Cut sectional model of 4 Stroke 4 cylinder diesel engine (Motor drive)	

12	Cut sectional model of 4 Stroke 1 cylinder petrol engine (Hero Honda Splendor engine) (Motor drive)	
13	Independent Suspension system model	

14	Rack and pinion power steering system model (Maruti 800 car)	
15	Cut sectional car model of front engine rear wheel drive arrangement (Fiat car model)	

List of Experiments

Significance of the course: This course is intended to build up necessary background for understanding basic concepts of automobile engineering and acquaint with the principle, construction and working of it.

Experiment No.1 :- Study of Layout of an automobile Aim & objective: To study about the layout of the automobile, front in line, cross engine, rear engine, 2W and 4W drive. Outcomes: Able to recognize and demonstrate the basic components and drive systems arrangements.	**CO5**
Experiment No.2 :- Study of Conventional and modified Engines Aim & objective: To study construction and working of petrol and diesel engines used in automobile. Study of Conventional and MPFI and CRDI systems. Outcomes: will be able to identify the basic components of conventional engines, demonstrate its working and differentiate between conventional and modified engines.	**CO5**
Experiment No.3:- Study of clutches. Aim & objective: To study construction and working of single plate, multiple plate and centrifugal clutches used in the automobile. Outcomes: will be able to identify the basic components of clutch, demonstrate its working and differentiate between its types.	**CO5**
Experiment No.4:- Study of manual gear box. Ami & objective: To study the construction and working of four wheeler manual shift gearbox used in automobile. Outcomes: will be able to identify the basic components of manual gear box, demonstrate its working and differentiate between manual gear box types.	**CO5**
Experiment No.5:- Study of rigid axle and independent suspension. Ami & objective: To study construction and working of rigid axle and independent suspension (wishbone parallel link, Mac-Pherson and Trailing arm) system used in	**CO5**

the automobile, balancing rod and shock absorber. Outcomes: will be able to identify the main components of suspension, demonstrate its working and differentiate between its types. Understand the function of balancing rod and shock absorber.	
Experiment No.6:- Study of steering systems and its gearbox. Ami & objective: To study construction & Working of Steering Assembly, one steering Gear Box and Rack & pinion steering system used in the automobile Outcomes: will be able to identify the main components of steering system, demonstrate its working and differentiate between its types. And also Understand the function of functions of steering gearbox.	**CO5**
Experiment No.7:- Study of differential. Ami & objective: To study construction and working of differential used in automobile for rigid axle and independent suspension vehicle. Outcomes: will be able to identify the components of differential and demonstrate its working.	**CO5**
Experiment No.8:- Study of Brakes. Ami & objective: To study construction and assembly of the braking system used in automobile. Study of tandem Master Cylinder and slave cylinder. Outcomes: will be able to identify the main components of braking system, demonstrate its working and differentiate between its types. And also Understand the function of functions of master cylinder and slave cylinder.	**CO5**
Experiment No.9:- Study of Electrical system of automobile Ami & objective: To study the construction and working of starting system, ignition system and charging system used in automobile. Outcomes: will able to describe the stating of vehicle, how engine get ignite and how battery get charge in the automobile.	**CO5**
Experiment No.10:- Study of automobile air conditioning system. Ami & objective: To study air conditioning system in car. Also study the various	**CO5**

components and controls. Outcomes: will be able to identify the basic components, its working cycle and demonstrate its working.	