

IC Engine lab:

This lab is designed for the students who are in the fifth semester of the Automotive Engineering Dual Degree program. This lab has two components: i). Engine Testing and performance study, and, ii). demonstration units of other automotive subsystems such as transmission, brakes, suspension and steering.



In engine testing, the lab has been designed in such a way that the students can appreciate the aspects of engine testing and how to study the performance characteristics of various types of engines. Efforts have been made to accommodate different types of engines such as four-stroke/two-stroke, Petrol/Diesel, Single cylinder/Multi Cylinder, Air-cooled/Water cooled, naturally aspirated/turbocharged, etc. Every engine test setup has its interface with a computer to record measurement data using specially developed software. Engines can be loaded through eddy current dynamometer and every test setup has its airflow, fuel flow, load indication, temperature measurement units. At the end of this lab session, it is expected that all students would be having thorough knowledge in engine testing, performance study, and behaviour of different engines. Also, the students are expected to generate an engine map as the end project with the collected test data. The various engine outputs that are evaluated under this program are:

1. Engine torque.
2. Indicated, Brake and Friction power.
3. Brake and Indicated thermal efficiency.
4. Volumetric flow rate of air and fuel.
5. Mechanical efficiency.
6. Brake and Indicated Specific Fuel Consumption.
7. Energy balance.

Automotive sub-systems lab:



In the automotive sub-systems component, the students will be introduced to multiple functional cut sections and working standalone demonstrators of automobile sub-assemblies. Also, a few important aggregates like engine, clutch, and the gearbox will be dismantled, to study their construction features and assembled back by the students. The topics covered in this component are:

1. Fuel injection and ignition module.
2. Steering and suspension module.
3. Anti-Lock Brake System (ABS) module.
4. Synchromesh gearbox module.
5. Refrigeration and Air conditioning module.
6. Hydraulic and pneumatic brake system.