

# LABS AND RESOURCES

The well-equipped laboratories offered in the Department of Mechanical Engineering enables students to understand, apply and substantiate the classroom knowledge to the hands-on training on the various experiments during their lab session

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## Bosch Centre of Excellence in Automation



Centre of Excellence in Automation Technologies” in collaboration with BOSCH, Germany, to set up well-equipped laboratories with state-of-the-art facilities for Hydraulics, Electro pneumatics, PLCs, Sensorics, Mechatronics, and Robotics. The equipment is the same as that used in industry and will be used for teaching, research, and training purpose. This is one of the exclusive facilities in the western region of the country.

**Major Equipments:-** Hydraulics system, Pneumatics system, PLCs, Sensorics, Mechatronics system, and Robotics .

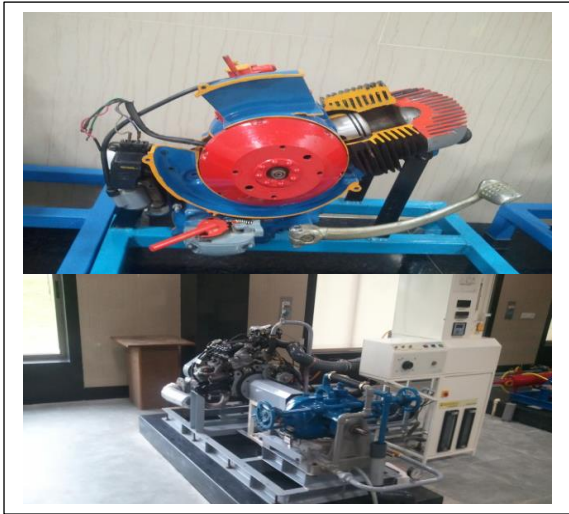
## Strength of Materials Laboratory



The strength of materials lab is to demonstrate the principles of the mechanics of materials and structural analysis to the students through a series of experiments. In this lab, the experiments are performed to measure the properties of the materials such as tensile strength, impact strength, compressive strength, hardness, etc.

**Major Equipments:-** Universal testing machine, Impact testing machine, Brinell hardness testing machine, Rockwell hardness testing machine, Torsion testing machine, etc

## IC Engine & Thermal Laboratory



The lab is well-equipped and enables students to understand the basic construction of two stroke and four stroke diesel and petrol engine. The lab also contains basic parts of an engine like a carburettor, Fuel injection system, engine cooling system

**Major Equipments:** - Two stroke and four stroke diesel and petrol engine, Carburettor, Different fuel injection systems

## Fluid Mechanics & Machinery Laboratory



The Fluid Mechanics laboratory is designed to examine the properties of fluids and to conduct experiments on incompressible flow. Facilities are available for investigating the fundamentals of fluid statics as well as kinematics and kinetics of fluid flow to enhance the hands-on experience of our students.

**Major Equipments:** - Major Equipment: please include Kaplan turbine, double acting reciprocating pump, venturimeter and orifice meter apparatus, Impact of jet apparatus, etc.

## Dynamics of Machinery Laboratory



The lab is well-equipped and enables students to understand the balancing of machine parts statically and dynamically and also used to understand the dynamic behaviour of moving objects

**Major Equipments:** - Static and dynamic balancing machine, Dynamometer, Mechanisms, Cam and follower models, Universal Vibration apparatus, Types of Gear models, Flywheel

## Refrigeration and Air conditioning



The lab is well-equipped and enables students to understand the basics of refrigeration and air conditioning.

**Major Equipments:** - Refrigeration and air conditioning trainer, heat pumps (mechanical and water), and cut- sectional models of Reciprocating and Rotary Refrigerant compressor

## Metrology and Measurement Laboratory



The lab comprises advanced equipment such as tool makers microscope, Autocollimator, etc. along with other necessary instruments required for acquainting students with the knowledge of metrology and measurements. It can facilitate 30 students at a time to perform experiments independently.

**Major Equipments:** - Tool Maker's microscope, Piezoelectric pressure transducer, Floating carriage micrometer, LVDT (Linear Variable differential transformer), Thermocouple module, RTD module, Thermistor module, Resistance strain gauge, Vacuum Pump,

## CAD Center



Computer Aided Design-CAD has defined the use of computers in the Design Process. A CAD system consists of several hardware and, specialised software (depending on the particular area of application) and peripherals, which in certain applications are quite specialised. The core of a CAD system is the specialised software, which makes use of graphics for product representation; databases for storing the product model, and drives the peripherals for product presentation. Its use does not change the nature of the design process but as the name states.

**Major Software's:** - AutoCAD, solidworks, ANSYS, etc

## Heat Transfer Laboratory



The lab is well-equipped with calibrated equipment and enables students to understand the basics of modes heat transfer i.e. conduction, convection, and radiation

**Major Equipments:** - Thermal conductivity of metallic rod apparatus, Thermal conductivity of insulating powder apparatus, guarded hot plate method, Pin-Fin Apparatus, Vertical tube losing heat under natural convection, Emissivity measurement apparatus, Stefan Boltzmann apparatus, Parallel and counter flow heat exchanger, Two-phase heat transfer unit, etc

## Mechanical Workshop Fitting Shop/Welding Shop/Machine Shop/CNC Shop



Workshop lab for 1st year is very useful because it provides a basic knowledge of machines, welding and fitting.

To provide a safe and innovative instructional Machine shop facility that serves Mechanical Engineering students. And mentoring our students through the process of design, fabrication, and modification of prototypes bringing their ideas to life.

**Major Equipments:** - VMC, CNC Lathe, Lathe Machines, Drilling Machine, Milling Machine, Shaper Machine, Slotting Machine, Hacksaw Machine, Bench Grinder, etc