

## Lab Equipment List

### Department of Mechanical Engineering

Sr. No.	Lab(s) of Course(s) Conducted in the Lab	Type(s) of Workstations (No. of each type)
1	Computer Lab	44 x Intel Core i5-2700K computers
2	Applied Physics for Mechanical Engineers	9 x Galvanometer 9 x Screw Gauge 9 x Vernier Caliper 1 x Optics setting apparatus 1 x Newton rings 1 x Spectrometer 1 x Hook's law apparatus 1 x Thermometers 1 x Telescopes 1 x Micrometers 1 x Vernier calipers 1 x Fly wheel for demonstration purpose 1 x Compasses 1 x Mechanical balance: weight set 1 x Ballistic galvanometer 1 x Thermocouples 1 x Sextant 1 x Compound pendulum 1 x Compass scale apparatus 1 x Barton's apparatus

3	Engineering Drawing and Graphics	50 x Drawing Boards
4	Workshop Practice	5 x Arc welding plant 2 x Argon gas welding plant 2 x Oxygen gas welding plant 2 x Spot welding 4 x Lathe Machines 1 x Universal milling machine 1 x Horizontal milling machine 1 x CNC Lathe machine 1 x Power Hack saw with blade: 2 x Off Hand Grinder 1 x Shaper Machine 2 x Vertical Drill Machine 2 x Furnace, die and casting items 1 x Bench drilling machine 2 x Surface grinding 1 x Pedestal grinding machine: 12" wheel size 1 x Wood cutter electrical 1 x Surface Plates 1 x Metal Cut-off machine
5	Engineering Mechanics	1 x Redundant Truss 1 x Forces in a Truss 1 x Pin Jointed Frameworks 1 x Equilibrium of Forces 1 x Fink Truss 1 x Toggle Joint Apparatus 1 x Universal Frame and Stand 1 x Equilibrium on two arm lever apparatus 1 x Interface 1 x Deflection of Frames  1 x Acceleration Apparatus 1 x Rolling Disc on An Inclined Plane 1 x Centrifugal Force Apparatus 1 x Work Done by A Variable Force

		<p>1 x Plate Clutch Friction Apparatus  1 x Inclined Plane kit  1 x Gyroscope apparatus  1 x Belt Friction Apparatus  1 x Wheel and differential axle  1 x Flywheel Apparatus  1 x Moment of Inertia Apparatus  1 x Constant Velocity Joint Apparatus</p>
6	Thermodynamics	<p>1 x Expansion of Perfect Gases Apparatus  1 x Marcet Boiler  1 x Temperature Measurement &amp; Calibration  1 x Multi Stage Centrifugal Compressor  1 x Pressure Measurement and Calibration  1 x Four Stroke Petrol Engine (Cut-Model)  1 x Four Stroke Diesel Engine (Cut-Model)  1 x Functional Wankel Engine (Cut-Model)</p> <p>1 x Experimental Impulse Turbine  1 x Experimental Reaction Turbine  1 x Functional Turbo Jet Engine (Cut-Model)  1 x Air Compressor  1 x Nozzle performance Apparatus  1 x Single-Cylinder Steam Engine</p>
7	Circuits and Electronics	<p>8 x Digital Oscilloscope  8 x Digital Function generator DMM  14 x ETS Trainer  14 x DC power Supply  10 x NI ELVIS  10 x KITS interfaced with Laptops</p>
8	Mechanics of Materials	<p>1 x Rubber in Shear Apparatus  1 x Rockwell/ Brinell Hardness Tester  1 x Extension and Compression of Spring</p>

		<p>1 x Creep Testing Machine</p> <p>1 x Combined Shear Force and bending Moment Apparatus</p> <p>1 x Rotating Fatigue Machine</p> <p>1 x Pendulum Impact Tester, 25 Nm (based on DIN EN ISO 148-1)</p> <p>1 x Combined bending &amp; Torsion Apparatus</p> <p>1 x Continuous Beam Apparatus</p> <p>1 x Thick Cylinder Apparatus</p> <p>1 x Thin Cylinder Apparatus</p> <p>1 x Digital Strain Bridge</p> <p>1 x Deflection of Flat Plate</p> <p>1 x Strain Gauge Training System</p> <p>1 x Polariscope</p>
10	Numerical Computations	50 x Computer systems
11	Fluid Mechanics	<p>1 x Basic Hydraulic Bench</p> <p>1 x Dead Weight Pressure Tester</p> <p>1 x Hydrostatic Pressure</p> <p>1 x Flow over Notch</p> <p>1 x Meta Centric Height</p> <p>1 x Bernoulli's Theorem Apparatus</p> <p>1 x Impact of Jet</p> <p>1 x Orifice and Jet Flow</p> <p>1 x Flow through an Orifice</p> <p>1 x Pipe Friction</p> <p>1 x Bends and Fittings Friction</p> <p>1 x Centrifugal Pump</p> <p>1 x Hydrostatic Panel</p> <p>1 x Flow Channel and Flume Apparatus</p> <p>1 x Osborne Reynolds' Apparatus</p> <p>1 x Cavitation Apparatus</p> <p>1xhydraulic bench</p> <p>1xflow meter measurement apparatus</p>

		<ul style="list-style-type: none"> <li>1xseries and parallel pump</li> <li>1xflow channel apparatus</li> <li>1xfluid friction apparatus</li> <li>1xaxial flow fan apparatus</li> <li>1xreciprocating pump</li> <li>1xwind tunnel</li> </ul>
12	Instrumentation and Measurement	<ul style="list-style-type: none"> <li>1 x Magnetic Levitation System</li> <li>1 x Inverted Pendulum System</li> <li>1 x Oscilloscopes 20 MHz</li> <li>5 x Volt meters and Current Meters/Single Phase</li> <li>2 x 3-Phase Power Meters</li> <li>6 x Single Phase Energy Meter</li> <li>9 x DC and AC Bridges</li> <li>2 x Meggers/Earth Testers</li> <li>1 x Data acquisition cards</li> <li>10 x desktop computers sensors/ transducers</li> <li>1 x vernier caliper</li> <li>1 x dead weight calibrator</li> <li>1 x bore gauge</li> <li>1 x vernier bevel protector</li> <li>1 x strain gauge measurement apparatus</li> <li>1 x transducer and instrumentation trainer</li> <li>1 x LVDT transducer trainer</li> <li>1 x temperature transducer trainer</li> <li>1 x pressure transducer trainer</li> <li>1 x strain gauge transducer trainer</li> <li>1x speed/position/rotational transducer trainer</li> <li>1 x ultrasonic/vibrational /environment transducer trainer</li> </ul>
13	CAD/ CAM	<ul style="list-style-type: none"> <li>50 x Computer systems</li> <li>1xAnsys</li> <li>1xCreo</li> <li>1 x CNC Lathe machine</li> <li>1 x Milling Machine</li> </ul>

		<p>1 x Computer Controlled Robotic arm  3 x 3D Printers  1 x 3D Scanner</p>
14	<p>Theory of Machines,  Mechanical Vibrations</p>	<p>1 x Simple Mechanism Kit  1 x Four bar chain apparatus  1 x Bevel helical Gear  1 x Slider crank Mechanism apparatus  1 x Oscillating Cylinder Mechanism  1 x Cam &amp; tappet Apparatus  1 x Epicyclic Gear Trains Apparatus  1 x Belt Drive Apparatus  1 x Compound Wheel &amp; Axle  1 x Gyroscope Wheel  1 x Geneva Mechanism</p> <p>1 x Torsional Vibration  1 x Free and Damped Torsional Vibration  1 x Oscilloscope, 20 MHz  1 x Universal vibration apparatus  1 x Free vibration of bending bar</p>
15	<p>Heat and Mass  Transfer,    Air Conditioning and  Refrigeration</p>	<p>1 x Linear / Radial Heat Transfer Unit  1 x Thermal Conductivity of Liquid and Gases  1 x Laminar / Viscous Flow Heat Transfer Unit  1 x Radiation Heat Exchanger  1 x Flow Boiling Demonstration  1 x Free and Force Convection  1 x Boiling Heat Transfer Apparatus</p> <p>1 x Domestic Air Conditioning Trainer  1 x Mechanical Heat Pump  1 x Computer Controlled Air Conditioning Laboratory Unit  1 x Vortex Tube Refrigeration  1 x Concentric Tube Heat Exchanger</p>

		1 x Cross Flow Heat Exchanger
16	Finite Element Analysis	50 x Computer systems
17	Renewable Energy, IC Engine, Power plant	1 x Biogas Plant, 1 x Solar and Wind Energy Training System, 1 x Fuel cell System 1 x Multi Turbine Test Set 1 x Gas Turbine Power Plant 1 x Small Engine Test Bed, 7.5 kW 1 x Combustion laboratory unit 1 x VB 4806 16 valves 4 cylinder Fiat Engine with multi point electronic injection + gearbox + turbo supercharger 1 x Oxygen bomb Calorimeter 1 x Gas Analyzer 1 x Differential gearbox

18	Control Engineering	<ul style="list-style-type: none"><li>8 x Control Engineering Trainers</li><li>2 x PLC's Trainer kits</li><li>PID Controller</li><li>2 x DSP Development and Experiment System with Control Modules for systems</li><li>FPGA Trainer</li><li>5 x Digital oscilloscope</li><li>1 x Process control trainer 4 in one</li><li>1 x Electrical machine trainer</li><li>1 x Transducer and instrumentation trainer</li><li>1 x training system, level control</li><li>1 x training system, flow control</li><li>1 x training system, pressure control</li><li>1 x training system, temperature control</li><li>1 x training system, speed control</li><li>1 x training system</li></ul>
----	---------------------	---