

Lab Apparatus for Mechanical Engineering Department

| Lab No. | Sr. No. | LABS | QTY |
|---------|---------------------|-------------------------------------|-----|
| 1 | | Engineering Drawing and Graphics | |
| 2 | | Intoduction to computer | |
| 3 | | Optics / Physics Lab | |
| | 1 | Optics setting apparatus | 1 |
| | 2 | Newton rings | 1 |
| | 3 | Spectrometer | 1 |
| | 4 | Electromagnetic coils | 1 |
| | 5 | Hook's law apparatus | 1 |
| | 6 | Thermometers | 1 |
| | 7 | Telescopes | 1 |
| | 8 | Micrometers | 2 |
| | 9 | Vernier calipers | 2 |
| | 10 | Fly wheel for demonstration purpose | 1 |
| | 11 | Compasses | 2 |
| | 12 | Mechanical balance: weight set | 1 |
| | 13 | Ballistic galvanometer | 1 |
| | 14 | Thermocouples | 1 |
| | 15 | Sextant | 1 |
| | 16 | Compound pendulum | 1 |
| | 17 | Compass scale apparatus | 1 |
| 18 | Barton ,s apparatus | 1 | |
| 4 | | workshop | |
| | 1 | Arc welding plant | 1 |
| | 2 | Gas welding plant | 1 |
| | 3 | Spot welding | 1 |
| | 4 | Lathe Machines | 4 |
| | 5 | Universal milling machine | 1 |
| | 6 | CNC Lathe machine | 1 |
| | 7 | Power Hack saw with blade: | 1 |
| | 8 | Off Hand Grinder | 1 |
| | 9 | Shaper Machine | 1 |
| | 10 | Vertical Drill Machine | 2 |
| | 11 | Furnace, die and casting items | 1 |
| | 12 | Bench drilling machine | 1 |
| 13 | Hydraulic Press | 1 | |

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| | 14 | Horizontal Milling Machine | 1 |
| | 15 | Electric Furnace | 1 |
| | 16 | Surface grinding | 1 |
| | 17 | Pedestal grinding machine: 12" wheel size | 1 |
| | 18 | Wood cutter electrical | 1 |
| | 19 | Surface Plates | 1 |
| | | Statics | |
| 5 | 1 | Redundant Truss | 1 |
| | 2 | Forces in a Truss | 1 |
| | 3 | Pin Jointed Frameworks | 1 |
| | 4 | Equilibrium of Forces | 1 |
| | 5 | Fink Truss | 1 |
| | 6 | Toggle Joint Apparatus | 1 |
| | 7 | Universal Frame and Stand | 1 |
| | 8 | Equilibrium on two arm lever apparatus | 1 |
| | 9 | Deflection of Frames | 1 |
| | | Thermodynamics | |
| 6 | 1 | Single-Cylinder Steam Engine | 1 |
| | 2 | Expansion of Perfect Gases Apparatus | 1 |
| | 3 | Marcet Boiler | 1 |
| | 4 | Temperature Measurement & Calibration | 1 |
| | 5 | Multi Stage Centrifugal Compressor | 1 |
| | 6 | Pressure Measurement and Calibration | 1 |
| | 7 | Four Stroke Petrol Engine (Cut-Model) | 1 |
| | 8 | Four Stroke Diesel Engine (Cut-Model) | 1 |
| | 9 | Functional Wankel Engine (Cut-Model) | 1 |
| | 10 | Experimental Impulse Turbine | 1 |
| | 11 | Experimental Reaction Turbine | 1 |
| | 12 | Functional Turbo Jet Engine (Cut-Model) | 1 |
| | 13 | Air Compressor | 1 |
| | 14 | Nozzle performance Apparatus | 1 |
| | 15 | Air consumption of the experimental unit | 1 |
| | | Dynamics | |
| | 1 | Acceleration Apparatus | 1 |
| | 2 | Rolling Disc on An Inclined Plane | 1 |
| | 3 | Centrifugal Force Apparatus | 1 |
| | 4 | Work Done by A Variable Force | 1 |
| | 5 | Plate Clutch Friction Apparatus | 1 |

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| 7 | 6 | Inclined Plane kit | 1 |
| | 7 | Gyroscope apparatus | 1 |
| | 8 | Belt Friction Apparatus | 1 |
| | 9 | Wheel and differential axle | 1 |
| | 10 | Flywheel Apparatus | 1 |
| | 11 | Moment of Inertia Apparatus | 1 |
| | 12 | Constant Velocity Joint Apparatus | 1 |
| 8 | Mechanics of Materials | | |
| | 1 | Rubber in Shear Apparatus | 1 |
| | 2 | Rockwell/ Brinell Hardness Tester | 1 |
| | 3 | Extension and Compression of Spring | 1 |
| | 4 | Creep Testing Machine | 1 |
| | 5 | Combined Shear Force and bending Moment Apparatus | 1 |
| | 6 | Rotating Fatigue Machine | 1 |
| | 7 | Pendulum Impact Tester, 25 Nm (based on DIN EN ISO 148-1) | 1 |
| | 8 | Combined bending & Torsion Apparatus | 1 |
| | 9 | Continuous Beam Apparatus | 1 |
| | 10 | Thick Cylinder Apparatus | 1 |
| | 11 | Thin Cylinder Apparatus | 1 |
| | 12 | Digital Strain Bridge | 1 |
| | 13 | Deflection of Flat Plate | 1 |
| | 14 | Strain Gauge Training System | 1 |
| 15 | Polariscope | 1 | |
| 9 | Thermodynamics II | | |
| 10 | Circuits and Electronics | | |
| 11 | Mechanics of Materials II | | |
| 12 | Engineering Fluid Mechanics | | |
| 13 | Electric Machines | | |
| 14 | Engineering Fluid Mechanics II | | |
| | 1 | Hydraulic Bench | 1 |
| | 2 | Flow Meter Measurement Apparatus | 1 |
| | 3 | Series and Parallel Pump (Universal pump test rig) | 1 |
| | 4 | Flow Channel Apparatus | 1 |
| | 5 | Fluid Friction Apparatus | 1 |
| | 6 | Axial Flow Fan Apparatus | 1 |
| | 7 | Reciprocating pump | 1 |
| | 8 | Cavitation Apparatus | |
| 9 | Wind Tunnel | 1 | |

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| 15 | | Numerical Computations | |
| | | Mechanics of Machines | |
| 16 | 1 | Simple Mechanism Kit (4) | 1 |
| | 2 | Four bar chain apparatus: Investigation of a four-joint link | 1 |
| | 3 | Bevel helical Gear | 1 |
| | 4 | Slider crank Mechanism apparatus | 1 |
| | 5 | Oscillating Cylinder Mechanism | 1 |
| | 6 | Cam & tappet Apparatus | 1 |
| | 7 | Epicyclic Gear Trains Apparatus | 1 |
| | 8 | Belt Drive Apparatus | 1 |
| | 9 | Compound Wheel & Axle | 1 |
| | 10 | Gyroscope wheel | 1 |
| | 11 | Geneva Mechanism | 1 |
| | | Heat and Mass Transfer | |
| 17 | 1 | Linear / Radial Heat Transfer Unit | 1 |
| | 2 | Thermal Conductivity of Liquid and Gases | 1 |
| | 3 | Laminar / Viscous Flow Heat Transfer Unit | 1 |
| | 4 | Radiation Heat Exchanger | 1 |
| | 5 | Flow Boiling Demonstration | 1 |
| | 6 | Free and Force Convection | 1 |
| | 7 | Boiling Heat Transfer Apparatus | 1 |
| | 8 | Concentric Tube Heat Exchanger | 1 |
| | 9 | Cross Flow Heat Exchanger | 1 |
| | | Instrumentation and Measurement | |
| 18 | 1 | Vernier Calipers | 1 |
| | 2 | Dead weight calibrator | 1 |
| | 3 | Micrometer | 1 |
| | 4 | Bore gauge | 1 |
| | 5 | Vernier bevel Protector | 1 |
| | 6 | Strain Gauge measurement apparatus | 1 |
| | 7 | Transducer & Instrumentation Trainer | 1 |
| | 8 | LVDT Transducer Trainer | 2 |
| | 9 | Temperature Transducer Trainer | 2 |
| | 10 | Pressure Transducer Trainer | 2 |
| | 11 | Strain Gauge Transducer Trainer | 2 |
| | 12 | Speed/Position/Rotational Transducer Trainer | 2 |
| | 13 | Ultrasonic/Vibration/Environment Transducer Trainer | 2 |
| | | Manufacturing Process | |

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| 19 | 1 | Robotic Arm | 1 |
| | 2 | 3D printer(Small scale) | 2 |
| | 3 | PLA Filament Large Spool | 10 |
| | 4 | 3D Scanner | 1 |
| | Mechanical Vibration | | |
| 20 | 1 | Torsional Vibration | 1 |
| | 2 | Free and Damped Torsional Vibration | 1 |
| | 3 | Oscilloscope, 20 MHz | 1 |
| | 4 | Universal vibration apparatus | 1 |
| | 5 | Free vibration of bending bar: investigation of the free vibration on a bending beam | 1 |
| | Air Conditioning and Refrigeration | | |
| 21 | 1 | Domestic Air Conditioning Trainer | 1 |
| | 2 | Mechanical Heat Pump | 1 |
| | 3 | Computer Controlled Air Conditioning Laboratory Unit | 1 |
| | 4 | Vortex Tube Refrigeration | 1 |
| | CAD | | |
| 22 | 1 | ANSYS | NA |
| | 2 | CREO | NA |
| | Control Engineering | | |
| 23 | 1 | Electrical machine trainer | 1 |
| | 2 | Transducer and instrumentation trainer | 1 |
| | 3 | Training System : Level Control, HIS: Fundamentals of control engineering using the example of a level control system with integral behaviour | 1 |
| | 4 | Training System : Flow Control, HIS: Fundamentals of control engineering using the example of a rapid flow control system | 1 |
| | 5 | Training System : Pressure Control, HIS: Fundamentals of control engineering using the example of a pressure control system with first order lag | 1 |
| | 6 | Training System : Temperature Control, HIS: Fundamentals of control engineering using the example of a temperature control system with dead time | 1 |
| | 7 | Training System : Speed Control, HIS: Fundamentals of control engineering using the example of a speed control system with first order lag | 1 |
| | 8 | Training System : Position Control, HIS: Fundamentals of control engineering using the example of a position control system with integral behaviour | 1 |
| | Renewable Energy | | |
| 24 | 1 | Biogas Plant | 1 |
| | 2 | Solar and Wind Energy Training System | 1 |

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| 47 | 3 | Fuel cell System | 1 |
| | 4 | Multi Turbine Test Set | 1 |
| | 5 | Gas Turbine Power Plant | 1 |
| 25 | | IC Engines | |
| | 1 | Small Engine Test Bed, 7.5 kW | 1 |
| | 2 | Combustion laboratory unit | 1 |
| | 3 | VB 4806 16 valves 4 cylinder Fiat Engine with multi point electronic injection + gearbox + turbo supercharger | 1 |
| | 4 | Oxygen bomb Calorimeter | 1 |
| | 5 | Gas Analyzer | 1 |
| | 6 | Differential gearbox | 1 |