



**DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY,
MURTHAL, SONEPAT, HARYANA-131039**

**APPARATUS / SOFTWARES FOR B. TECH. IN MECHANICAL ENGINEERING
(4 Years)**

	INFRASTRUCTURE	REQUIRED	AVAILABLE	DEFICIENCY
List of Labs / Equipments / Softwares				
Sr. No.	Name of Equipments / Softwares	Quantity		
2nd Year Labs: MD Lab, SOM Lab, EE Lab, CAD Lab, MS Lab, FM Lab, EC Lab, MP Lab				
Name of the Lab: Machine Drawing Lab				
1.	Drawing Boards	One for each student		
Name of the Lab: Strength of Materials Lab				
2.	Brinell Hardness Tester	01		
3.	Rockwell Hardness Tester	01		
4.	Vickers Hardness Tester	01		
5.	Erichsen Sheet Metal / Cupping Tester	01		
6.	Izod Impact Tester	01		
7.	Charpy Impact Tester	01		
8.	Universal Testing M/C	01		
9.	Torsion Testing M/C	01		
10.	Fly Wheel to find out Moment of Inertia	01		
Name of the Lab: Electronics Engineering Lab				
11.	P.N. diode characteristics kit	03		
12.	C.B. transistor characteristics kit	03		
13.	C.E. transistor characteristics kit	03		
14.	Clipper & Clamper Kit	03		
15.	Half wave & Full wave rectifier kit	03		
16.	OP- Amp applications kit	03		
17.	Basic logic gate kit	03		
18.	Dual channel CRO 20 MHz	05		
19.	Function generator 1MHZ	05		
20.	Multimeter	05		
21.	Bread board	10		
22.	DC Power supply 0-30VDC	05		
23.	Discrete components of different value (PN Diode, BJT, LED, different value of resistances and IC like 7400, 7402, 7404, 7408, 7432, 7486 etc.	25 EACH		
Name of the Lab: Computer Aided Drafting Lab				
24.	AUTO CAD, I-DEAS, PRO-ENGINEER etc.-Latest Version	25 Users license		
25.	WORK STATIONS	25 Users		
Name of the Lab: Material Science Lab				
26.	Models & Charts of Crystal Structure	01 Set		
27.	Crystal Imperfection Charts / Models	01 Set		
28.	Charts & Metallurgical Microscope	01		
29.	Iron-Carbon Equilibrium Phase Chart	01		
30.	Micro Structure of Heat Treated Steel Charts & Metallurgical Microscope	01		
31.	Thermo-setting plastics charts	01 Set		
32.	Creep behavior chart	01		
33.	Chart for chemical corrosion and protection	01		
34.	Plastics Types & properties chart	01		
35.	Bravais lattices- wire frame models.	01		
36.	Crystal structure & Crystal imperfection ball models.	01		
Name of the Lab: Fluid Mechanics Lab (Any 08 from the list + 02 either from the list or designed by the Department)				
37.	Impact of Jet Apparatus	01		

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38.	Orifice meter Apparatus	01		
39.	Notch Apparatus	01		
40.	Friction Factor Apparatus	01		
41.	Venturimeter Apparatus	01		
42.	Orifice Test Rig	01		
43.	Bernoulli's Theorem Apparatus	01		
44.	Reynolds Apparatus	01		
45.	Metacentric Height Apparatus	01		
46.	Minor Losses Test Rig	01		
47.	Forced Vortex Flow Apparatus	01		
Name of the Lab: Energy Conversion Lab (Any 08 from the list + 02 either from the list or designed by the Department)				
48.	Model of low pressure boilers with accessories & Mountings	02		
49.	Model of high pressure boilers with accessories & Mountings	02		
50.	Boiler Test Rig	01		
51.	Impulse Turbine (Steam) Test Rig	01		
52.	Reaction Turbine (Steam) Test Rig	01		
53.	Separating & Throttling Calorimeter Test Rig	01		
54.	Steam Condenser Test Rig	01		
55.	Cooling Tower Test Rig	01		
56.	Bomb Calorimeter Test Rig	01		
57.	Calibration Apparatus - Thermometers & Pressure Gauges	01		
Name of the Lab: Manufacturing Practice Lab				
58.	Pattern Making & Foundry Shop with all tools & Equipments	01 Set		
59.	Welding M/C and related tools & Equipments	02 Sets		
60.	Grinding Machine and measurements tools	02 Sets		
61.	Lathe Machine	05 Set		
62.	Sample of components to measure tolerance in shaft, brush, key etc.	01 Set		
63.	Tail stock, Bench Vice, Screw Jack for assembly	01 Set each		
64.	Sheet Metal Shop with tools and equipments	01 Set		
65.	Milling Machine with indexing device	02 Set		
66.	Drilling Machine with tools	05 Set		
67.	CAD / CAE Software	20 User license		
3rd Year Labs: KM/C Lab, FM Lab, ICE & GT Lab, ANTC Lab, DM Lab, HT Lab, M & I Lab				
Name of the Lab: Kinematics of M/C Lab (Any 08 from the list + 02 either from the list or designed by the Department)				
68.	Simple Models of Kinematic link, Pairs, Chains and Mechanism	01 each		
69.	Pantograph, Slotted bar quick return mechanism, Whitworth quick return mechanism, scotch yoke mechanism, Elliptical trammel etc.	01 each		
70.	Working model of single slider crank mechanism with specification of angle of rotation of crank	01		
71.	Belt and pulley apparatus to find coefficient of friction between belt and pulley	01		
72.	Working model of various types of cam and follower	01 each		
73.	Cam analysis M/C	01		
74.	Working model of spur gear involute tooth profile	01		
75.	Various type of gears-Helical, cross helical worm, bevel gear etc	01 each		

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76.	Working model of screw jack to find efficiency	01		
77.	Various types of gear trains-simple, compound, reverted, epicyclic and differential	01 each		
Name of the Lab: Fluid Machines Lab (First 07 from the list + 02 either from the list or designed by the Department)				
78.	Pelton Turbine Test Rig	01		
79.	Francis Turbine Test Rig	01		
80.	Kaplan Turbine Test Rig	01		
81.	Centrifugal Pump Test Rig	01		
82.	Reciprocating Pump Test Rig	01		
83.	Gear Oil Pump Test Rig	01		
84.	Hydraulic Ram Test Rig	01		
85.	Model of Hydro-electric Power Plants	01		
86.	Tachometer	01		
Name of the Lab: IC Engines & Gas Turbine lab (Any 08 from the list + 02 either from the list or designed by the Department)				
87.	Working models of 2-stroke & 4-stroke Petrol Engine	01 each		
88.	Working models of 2-stroke & 4-stroke Diesel Engine	01 each		
89.	Orsat Apparatus	01		
90.	Multi-Cylinder Diesel Engine Test Rig	01		
91.	Multi-Cylinder Petrol Engine Test Rig	01		
92.	Single-Cylinder Diesel Engine Test Rig	01		
93.	Single-Cylinder Petrol Engine Test Rig	01		
94.	Two Stroke, Single-Cylinder Petrol Engine Test Rig	01		
95.	Exhaust Gas Analyser	01		
96.	Smokemeter	01		
Name of the Lab: Applied Numerical Techniques & Computing Lab				
97.	MATLAB, C, C++ Software	25 users license		
98.	Workstations	25 users		
Name of the Lab: Dynamics of Machines Lab (Any 08 from the list + 02 either from the list or designed by the Department)				
99.	Working model of Universal governor with attachment of Watt governor, Porter governor, Proel governor, and Hartnell governor	01 each		
100.	Working model of Gyroscopic effect	01		
101.	Motorized gyroscope to determine gyroscopic couple	01		
102.	Static and dynamic balancing M/C	01		
103.	Working model of Rope brake dynamometer	01		
104.	Working model of Prony brake dynamometer	01		
Name of the Lab: Heat Transfer Lab (Any 07 from the list + 03 either from the list or designed by the Department)				
105.	Thermal Conductivity of Metal Bar Apparatus	01		
106.	Thermal Conductivity of Insulating Powder Apparatus	01		
107.	Thermal Conductivity of Liquid Apparatus	01		
108.	Pin. Fin Apparatus . Natural Convection	01		
109.	Pin. Fin Apparatus . Forced Convection	01		
110.	Natural Convection Apparatus	01		
111.	Forced Convection Apparatus	01		
112.	Emissivity Apparatus	01		
113.	Parallel Flow & Counter Flow Heat Exchanger Test Rig.	01		
114.	Stefan Boltzmann Apparatus	01		
115.	Heat Pipe Demonstrator Test Rig	01		
116.	Two Phase Heat Transfer Test Rig	01		
117.	Cross Flow Heat Exchanger Test Rig	01		

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Name of the Lab: Measurement & Instrumentation Lab (Any 08 from the list + 02 either from the list or designed by the Department)				
118.	Mercury-, in glass thermometer, Thermocouple, Electrical resistance thermometer, Bi-Metallic strip	10 each		
119.	Bourdon pressure gauge dead weight calibration setup.	01		
120.	LVDT instrument	01		
121.	Air Compressor	01		
122.	Load cell instrument	01		
123.	Rotating shaft & torque transducer	02		
124.	Strain gauge transducer instrument	02		
125.	pressure gauge	05		
126.	Vibrating M/C and oscilloscope test rig	01		
4th Year Labs: AE Lab, R & AC Lab, CAD Lab				
Name of the Lab: Automobile Engg. Lab (Any 07 from the list + 03 either from the list or designed by the Department)				
127.	Engine Systems & Sub Systems (Petrol & Diesel Engine)-Starting, Cooling, Lubricating & Ignition Systems	01 Each		
128.	Fuel Supply Systems . Carburetors, Injection Systems	01 Each		
129.	Clutches . Coil Spring, Diaphragm & Double Disc	01 Each		
130.	Transmission Systems . Synchromesh, Transaxle, Four wheel Drive & Transfer Case & Steering Column and floor	01 Each		
131.	Drive Lines & Differentials . Rear Wheel, Front Wheel, Differentials, Drive Axles and Four wheel Drive Line	01 Each		
132.	Suspension Systems . Front & Rear	01 Each		
133.	Steering Systems . Manual, Power & Steering wheel and Columns	01 Each		
134.	Tyres And Wheels . Bias & Radial Tyres, Various Types of Wheels	01 Each		
135.	Brake Systems . Hydraulic & Pneumatic, Drum, Disk, Antilock and System Packing	01 Each		
136.	Emission / Pollution Control Systems	01		
137.	Educational Software\$. Pro E/ I-Deas / Solid Edge etc.	01		
138.	Hypermesh and LS Dyna Solver or others software\$	01		
Name of the Lab: Ref. & Air Conditioning Lab (Any 07 from the list + 03 either from the list or designed by the Department)				
139.	Vapour Compression Refrigeration System Test Rig	01		
140.	Mechanical Heat Pump Test Rig	01		
141.	Air & Water Heat Pump Test Rig	01		
142.	Ice . Plant Test Rig	01		
143.	Air conditioning Test Rig	01		
144.	Recirculated Air conditioning Test Rig	01		
145.	Cut-Sectional Model of Reciprocating Compressor	01		
146.	Cut-Sectional Model of Rotary Compressor	01		
147.	Cut-Sectional Model of Chilling Plant	01		
148.	Various controls used in Refrigerating System	01		
149.	Various controls used in Air . Conditioning System	01		
Name of the Lab: Computer Aided Design Lab				
150.	AUTO CAD, CATIA, I-DEAS, PRO-ENGINEER, SOLID EDGE etc. -Latest Version	25 Users license		
151.	WORK STATIONS	25 Users		

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