



**St. JOSEPH'S INSTITUTE OF
TECHNOLOGY**
DEPT OF MECHANICAL ENGINEERING



LAB SPACE DETAILS

Sl. No.	Name of the Laboratory	Area of the laboratory available (sq.m.)	Deficiency %
1.	Computer Practices Laboratory	100	Nil
2.	Engineering Practices Laboratory	600	Nil
3.	Physics and Chemistry Laboratory - I	300	Nil
4.	Computer Aided Drafting and Modeling Laboratory	100	Nil
5.	Physics and Chemistry Laboratory - II	300	Nil
6.	Manufacturing Technology Laboratory - I	300	Nil
7.	Fluid Mechanics and Machinery Laboratory	300	Nil
8.	Electrical Engineering Laboratory	200	Nil
9.	Manufacturing Technology Laboratory-II	300	Nil
10.	Thermal Engineering Laboratory - I	300	Nil
11.	Strength of Materials Laboratory	150	Nil
12.	Dynamics Laboratory	150	Nil
13.	Thermal Engineering Laboratory-II	300	Nil
14.	Metrology and Measurements Laboratory	150	Nil
15.	C.A.D. / C.A.M. Laboratory	100	Nil
17.	Communication Skills - Laboratory Based	100	Nil
18.	Simulation and Analysis Laboratory	100	Nil
19.	Mechatronics Laboratory	150	Nil

LABORATORY EQUIPMENTS

Semester : I
 Name of the Laboratory Subject : COMPUTER PRACTICE LABORATORY

Requirements for a batch of 30 students

S.N O	Description of Equipment	Quantity required	Quantity available	Deficiency %
Hardware				
1.	LAN system with 33 nodes (OR) stand alone PCs	33 Nos.	33 Nos.	Nil
2.	Printer	03 Nos.	03 Nos.	Nil
Software				
1.	Operating System	Windows / Unix Clone	Available	Nil
2.	Compiler	C compiler	Available	Nil
3.	Application package	Office suite	Available	Nil

Name of the Laboratory Subject : Engineering Practices Laboratory

Requirements for a batch of 30 students

Sl.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
CIVIL				
1.	Assorted components for plumbing consisting of metallic pipes, plastic pipes, flexible pipes, couplings, unions, elbows, plugs and other fittings.	15 sets	15 sets	Nil
2.	Carpentry vice (fitted to work bench)	15 No.	15 No.	Nil
3.	Standard woodworking tools	15 sets	15 sets	Nil

4.	Models of industrial trusses, door joints, furniture joints	5 each	5 each	Nil
5.	Power Tools: (a) Rotary Hammer (b) Demolition Hammer (c) Circular Saw (d) Planer (e) Hand Drilling Machine (f) Jigsaw	2 Nos 2 Nos 2 Nos 2 Nos 2 Nos 2 Nos	2 Nos 2 Nos 2 Nos 2 Nos 2 Nos 2 Nos	Nil

MECHANICAL

1.	Arc welding transformer with cables and holders	5 No.	5 No.	Nil
2.	Welding booth with exhaust facility	5 No.	5 No.	Nil
3.	Welding accessories like welding shield, chipping hammer, wire brush, etc.	5 sets	5 sets	Nil
4.	Oxygen and acetylene gas cylinders, blow pipe and other welding outfit.	2 No.	2 No.	Nil
5.	Centre lathe	2 No.	2 No.	Nil
6.	Hearth furnace, anvil and smithy tools	2 sets	2 sets	Nil
7.	Moulding table, foundry tools	2 sets	2 sets	Nil
8.	Power Tool: Angle Grinder	2 Nos	2 Nos	Nil
9.	Study-purpose items: centrifugal pump, air-conditioner	One Each.	One Each.	Nil

ELECTRICAL

1.	Assorted electrical components for house wiring	15 sets	15 sets	Nil
2.	Electrical measuring instruments	10 sets	10 sets	Nil
3.	Study purpose items: Iron box, fan and regulator, emergency lamp	One each	One each	Nil
4.	Megger (250V/500V)	1 No.	1 No.	Nil
5.	Power Tools: (a) Range Finder (b) Digital Live-wire detector	2 Nos 2 Nos	2 Nos 2 Nos	Nil

ELECTRONICS

1.	Soldering guns	10 No.	10 No.	Nil
2.	Assorted electronic components for making circuits	50 No.	50 No.	Nil
3.	Small PCBs	10 No.	10 No.	Nil
4.	Multi Meters	10 No.	10 No.	Nil
5.	Study purpose items: Telephone, FM radio, low-voltage power supply	2 each	2 each	Nil

Name of the Laboratory Subject : Physics Laboratory I
Requirements for a batch of 30 students

S.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Lees' disc apparatus (With accessories)	5 Nos.	5 Nos.	Nil
2.	Air Wedge apparatus (With traveling microscopes and accessories)	5 Nos.	5 Nos.	Nil
3.	Spectrometer (With grating, prism and accessories)	5 Nos.	5 Nos.	Nil
4.	Diode laser (2 mW power) or He-Ne laser (2mW) (Lycopodium powder, Optical fibre Kit and accessories)	5 Nos.	5 Nos.	Nil
5.	Ultrasonic interferometer (With accessories)	5 Nos.	5 Nos.	Nil
6.	B-H Curve traces apparatus	5 Nos.	5 Nos.	Nil

Name of the Laboratory Subject : Chemistry Laboratory I

S.No.	Description of Equipment	Quantity	Quantity	Deficiency
1.	Electronic balance	1 No.	1 No.	Nil
2.	pH meter	8 Nos.	8 Nos.	Nil
3.	Conductivity bridge	8 Nos.	8 Nos.	Nil
4.	Potentiometer	8 Nos.	8 Nos.	Nil
5.	Platinum electrodes	8 Nos.	8 Nos.	Nil

6.	Calomel electrodes	8 Nos.	8 Nos.	Nil
7.	Spectrophotometer	1 No.	1 No.	Nil
8.	Flame photometer	1 No.	1 No.	Nil
9.	Oswald viscometer	15 Nos.	15 Nos.	Nil
10.	Glassware	Sufficient Quantity	Sufficient	Nil

Semester : II
Name of the Laboratory Subject : Computer Aided Drafting and Modeling Laboratory

Requirements for a batch of 30 students

S. No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Pentium IV computer or better hardware, with suitable graphics facility	30 Nos.	30 Nos.	Nil
2.	Licensed software for Drafting and Modeling	30 licenses	30 licenses	Nil
3.	Laser Printer or Plotter to print / plot drawings	2Nos.	2 Nos.	Nil

Name of the Laboratory Subject : Physics Laboratory –II

Requirements for a batch of 30 students

S.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Torsional Pendulum apparatus (With accessories)	5 Nos.	5 Nos.	Nil
2.	Non-uniform Bending apparatus (With accessories)	5 Nos.	5 Nos.	Nil
3.	Viscosity (Poiseuille's flow) apparatus (With accessories)	5 Nos.	5 Nos.	Nil
4.	Band gap apparatus/ Post office box	5 Nos.	5 Nos.	Nil

5.	Spectrometer (With grating, prism and accessories)	5 Nos.	5 Nos.	Nil
6.	Carey Foster Bridge	5 Nos.	5 Nos.	Nil

Name of the Laboratory Subject : Chemistry Laboratory – II
Requirements for a batch of 30 students

S.No	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Electronic balance	1 No.	1 No.	Nil
2.	pH meter	8 Nos.	8 Nos.	Nil
3.	Conductivity bridge	8 Nos.	8 Nos.	Nil
4.	Potentiometer	8 Nos.	8 Nos.	Nil
5.	Platinum electrodes	8 Nos.	8 Nos.	Nil
6.	Calomel electrodes	8 Nos.	8 Nos.	Nil
7.	Spectrophotometer	1 No.	1 No.	Nil
8.	Flame photometer	1 No.	1 No.	Nil
9.	Oswald viscometer	15 Nos.	15 Nos.	Nil
10.	Glassware	Sufficient Quantity	Sufficient Quantity	Nil

Semester : III
Name of the Laboratory Subject : Manufacturing Technology Lab – I

Requirements for a batch of 30 students

S.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Centre Lathes	7 Nos.	7 Nos.	Nil
2.	Horizontal Milling Machine	1 No	1 No	Nil
3.	Vertical Milling Machine	1 No	1 No	Nil
4.	Shaper	1 Nos.	1 Nos.	Nil

**Name of the Laboratory
Subject**

**: Thermal Engineering
Laboratory – I**

S.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Orifice meter setup	1 No.	1 No.	Nil
2.	Venturi meter setup	1 No.	1 No.	Nil
3.	Rotameter setup	1 No.	1 No.	Nil
4.	Pipe Flow analysis setup	1 No.	1 No.	Nil
5.	Centrifugal pump/submergible pump setup	1 No.	1 No.	Nil
6.	Reciprocating pump setup	1 No.	1 No.	Nil
7.	Gear pump setup	1 No.	1 No.	Nil
8.	Pelton wheel setup	1 No.	1 No.	Nil
9.	Francis turbine setup	1 No.	1 No.	Nil
10.	Kaplan turbine setup	1 No.	1 No.	Nil

**Name of the Laboratory : Electrical Engineering Lab
Subject**

S.No	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	DC Shunt motor	2	2	Nil
2.	DC Series motor	1	1	Nil
3.	DC shunt motor-DC Shunt Generator set	1	1	Nil
4.	DC Shunt motor-DC Series Generator set	1	1	Nil
5.	Single phase transformer	2	2	Nil
6.	Three phase alternator	2	2	Nil
7.	Three phase synchronous motor	1	1	Nil
8.	Three phase Squirrel cage Induction motor	1	1	Nil
9.	Three phase Slip ring Induction motor	1	1	Nil
10.	Single phase Induction motor	1	1	Nil

Semester : IV

Name of the Laboratory : Manufacturing Technology Lab – II

Subject

Requirements for a batch of 30 students

S.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Turret and Capstan Lathes	1 No each	1 No each	Nil
2.	Horizontal Milling Machine	2 No	2 No	Nil
3.	Vertical Milling Machine	1 No	1 No	Nil
4.	Surface Grinding Machine	1 No.	1 No.	Nil
5.	Cylindrical Grinding Machine	1 No.	1 No.	Nil
6.	Radial Drilling Machine	1 No.	1 No.	Nil
7.	Lathe Tool Dynamometer	1 No	1 No	Nil
8.	Milling Tool Dynamometer	1 No	1 No	Nil
9.	Gear Hobbing Machine	1 No	1 No	Nil
10.	Tool Makers Microscope	1 No	1 No	Nil
11.	CNC Lathe	1 No	1 No	Nil
12.	CNC Milling machine	1 No	1 No	Nil
13.	Gear Shaping machine	1 No	1 No	Nil
14.	Centerless grinding machine	1 No	1 No	Nil
15.	Tool and cutter grinder	1 No	1 No	Nil

Name of the Laboratory : Thermal Engineering Laboratory – I

Subject

Requirements for a batch of 30 students

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1	I.C Engine – 2 stroke and 4 stroke model	1 set	1 set	Nil
2	Apparatus for Flash and Fire Point	1 No.	1 No.	Nil
3	4-stroke Diesel Engine with mechanical loading.	1 No	1 No	Nil
4	4-stroke Diesel Engine with hydraulic loading.	1 No.	1 No.	Nil
5	4-stroke Diesel Engine with electrical loading.	1 No.	1 No.	Nil

6	Multi-cylinder Petrol Engine	1 No.	1 No.	Nil
7	Single cylinder Petrol Engine	1 No.	1 No.	Nil
8	Data Acquisition system with any one of the above engines	1 No.	1 No.	Nil
9	Steam Boiler with turbine setup	1 No.	1 No.	Nil

Name of the Laboratory : **Strength of Materials Lab**
Subject

Requirements for a batch of 30 students

S. No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Universal Tensile Testing machine with double shear attachment – 40 Ton	1	1	Nil
2.	Torsion Testing Machine (60 NM Capacity)	1	1	Nil
3.	Impact Testing Machine (300 J Capacity)	1	1	Nil
4.	Brinell Hardness Testing Machine	1	1	Nil
5.	Rockwell Hardness Testing Machine	1	1	Nil
6.	Spring Testing Machine for tensile and compressive loads (2500 N)	1	1	Nil
7.	Metallurgical Microscopes	3	3	Nil
8.	Muffle Furnace (800 °C)	1	1	Nil

Semester : **V**
Name of the Laboratory : **Dynamics Laboratory**
Subject

Requirement for a batch of 30 students

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Cam follower setup	1 No.	1 No.	Nil
2.	Motorised gyroscope.	1 No.	1 No.	Nil
3.	Governor apparatus - Watt, Porter, Proell and Hartnell governors.	1 No.	1 No.	Nil
4.	Whirling of shaft apparatus.	1 No.	1 No.	Nil
5.	Dynamic balancing machine.	1 No.	1 No.	Nil
6.	Two rotor vibration setup	1 No.	1 No.	Nil

7.	Spring mass vibration system	1 No.	1 No.	Nil
8.	Torsional vibration of single rotor system setup	1 No.	1 No.	Nil
9.	Gear Models	1 No.	1 No.	Nil
10.	Kinematic Models to study various mechanisms	1 No.	1 No.	Nil
11.	Turn table apparatus.	1 No.	1 No.	Nil
12.	Transverse vibration setup of a) cantilever b) Free-Free beam c) Simply supported beam.	1 No.	1 No.	Nil

Name of the Laboratory Subject : Thermal Engineering Laboratory-II

Requirement for a batch of 30 students

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Guarded plate apparatus	1 No.	1 No.	Nil
2.	Lagged pipe apparatus	1 No.	1 No.	Nil
3.	Natural convection-vertical cylinder apparatus	1 No.	1 No.	Nil
4.	Forced convection inside tube apparatus	1 No.	1 No.	Nil
5.	Composite wall apparatus	1 No.	1 No.	Nil
6.	Thermal conductivity of insulating powder apparatus	1 No.	1 No.	Nil
7.	Pin-fin apparatus	1 No.	1 No.	Nil
8.	Stefan-Boltzmann apparatus	1 No.	1 No.	Nil
9.	Emissivity measurement apparatus	1 No.	1 No.	Nil
10.	Parallel/counter flow heat exchanger apparatus	1 No.	1 No.	Nil
11.	Single/two stage reciprocating air compressor.	1 No.	1 No.	Nil
12.	Refrigeration test rig	1 No.	1 No.	Nil
13.	Air-conditioning test rig	1 No.	1 No.	Nil

**Name of the Laboratory : Metrology and Measurements
Subject : Laboratory**

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Micrometer	5	5	Nil
2.	Vernier Caliper	5	5	Nil
3.	Vernier Height Gauge	2	2	Nil
4.	Vernier depth Gauge	2	2	Nil
5.	Slip Gauge Set	1	1	Nil
6.	Gear Tooth Vernier	1	1	Nil
7.	Sine Bar	1	1	Nil
8.	Floating Carriage micrometer	1	1	Nil
9.	Profile Projector / Tool Makers Microscope	1	1	Nil
10.	Parallel / counter flow heat exchanger apparatus	1	1	Nil
11.	Mechanical / Electrical / Pneumatic Comparator	1	1	Nil
12.	Autocollimator	1	1	Nil
13.	Temperature Measuring Setup	1	1	Nil
14.	Force Measuring Setup	1	1	Nil
15.	Torque Measuring Setup	1	1	Nil
16.	Coordinate Measuring Machine	1	1	Nil
17.	Surface Finish measuring equipment	1	1	Nil
18.	Bore gauge	1	1	Nil
19.	Telescope gauge	1	1	Nil

**Name of the Laboratory : CAD/CAM Laboratory
Subject**

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
HARDWARE				
1.	Computer Server	1	1	Nil
2.	Computer nodes or systems (High end CPU with atleast 1 GB main memory) networked to the server	30	30	Nil

3.	A3 size plotter	1	1	Nil
4.	Laser Printer	1	1	Nil
5.	CNC Lathe	1	1	Nil
6.	CNC milling machine	1	1	Nil
SOFTWARE				
7.	Any High end integrated modeling and manufacturing CAD / CAM software	15 licenses	15 licenses	Nil
8.	CAM Software for machining centre and turning centre (CNC Programming and tool path simulation for FANUC / Sinumeric and Heiden	15 licenses	15 licenses	Nil
9.	Licensed operating system	Adequate	Adequate	Nil
10.	Support for CAPP	Adequate	Adequate	Nil

Name of the Laboratory : **Communication Skills Laboratory**
Subject

Requirement for a batch of 60 students

Sl.No.	Description of Equipment	Quantity required	Quantity available	Deficiency %
1.	Server	1 No.	1 No.	Nil
	o PIV system			
	o 1 GB RAM / 40 GB HDD			
	o OS: Win 2000 server			
	o Audio card with headphones			
o JRE 1.3				
2.	Client Systems	60 No.	60 No.	Nil
	o PIII or above			
	o 256 or 512 MB RAM /40 GB HDD			
	o OS: Win 2000			
	o Audio card with headphones			
o JRE 1.3				
3.	Handicam	1 No.	1 No.	Nil
4.	Television - 29"	1 No.	1 No.	Nil
5.	Collar mike	1 No.	1 No.	Nil
6.	Cordless mikes	1 No.	1 No.	Nil
7.	Audio Mixer	1 No.	1 No.	Nil
8.	DVD Recorder / Player	1 No.	1 No.	Nil
9.	LCD Projector with MP3 /CD /DVD provision for audio / video facility - desirable	1 No.	1 No.	Nil

Semester : VII
Name of the Laboratory : Computer Aided Simulation and Analysis
Subject : Laboratory

Requirement for a batch of 30 students

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Computer System 17" VGA Color Monitor Pentium IV Processor 40 GB HDD 512 MB RAM	30 Nos	30 Nos	Nil
2.	Color Desk Jet Printer	01	01	Nil
3.	Software Suitable Analysis software	30 Licences	30 Licences	Nil
4.	C / MATLAB	5 Licences	5 Licences	Nil

Name of the Laboratory Subject : Mechatronics Lab

Requirement for a batch of 30 students

S.No.	Description of Equipment	Quantity Required	Quantity available	Deficiency %
1.	Basic Pneumatic Trainer Kit with manual and electrical controls/ PLC Control	1 No	1No	Nil
2	Basic Hydraulic Trainer Kit	1No	1No	Nil
3	Hydraulics and Pneumatics Systems Simulation Software / Automation studio sets	10 No	10 No	Nil
4	8051 - Microcontroller kit with stepper motor and drive circuit sets	2 No	2 No	Nil
5	LAB VIEW software with Sensors to measure Pressure, Flow rate, direction, speed, velocity and force. seats	2 No	2 No	Nil