

# Don Bosco College of Engineering, Fatorda

## DEPARTMENT OF MECHANICAL ENGINEERING

### LIST OF LABORATORIES

#### 1. BASIC MECHANICAL ENGINEERING LABORATORY

Sl. No.	Equipment	Qty.
1	Model of Babcock & Wilcox Boiler	1
2	Model of Lancashire Boiler	1
3	Vertical Water tube boiler	1
4	Model of Valox Boiler	1
5	Pelton turbine model	1
6	Francis turbine model	1
7	Working Model of 2 stroke petrol engine	1
8	Working Model of 2 stroke diesel engine	1
9	Working Model of 4 stroke petrol engine	1
10	Working Model of 4 stroke diesel engine	1
11	Cut section model of 4 stroke diesel engine for valve timing	1
12	Cut section model of 2 stroke petrol engine for port timing	1

#### 2. IC ENGINE LABORATORY

Sl. No.	Equipment	Qty.
1	2 Stroke 1 cylinder petrol engine test rig w/ eddy current	1
2	4 Stroke 1 cylinder diesel engine test rig w/electric loading	1
3	4 Stroke 1 cylinder petrol engine test rig w/electric loading	1
4	Mini air conditioning Test rig	1
5	Gas emission analyzer	1
6	Variable compression ratio 1 cylinder, 4 stroke diesel engine with mechanical loading	1
7	3 cylinder , 4 stroke petrol engine test rig with hydraulic dynamometer	1

### 3. WORKSHOP

Sl. No.	Equipment	Qty.
1	Lathe Machines	18
2	Lathe machines (Champion Engg. Works)	2
3	Lathe machines HG-41 (supervenes)	1
4	Hydraulic cylindrical grinding machine (5 HP, 1400 rpm,)	1
5	Bench grinder 1 HP	1
6	Shaping machine (7.5 HP)	1
7	Tool and cutter grinder (440 V, 3 Phase 50 cycles AC )	1
8	Pedestal grinder	1
9	Radial & pillar type drilling machine	1
10	Drilling machine	1
11	Surface grinding machine (15 HP, 1440 rpm)	1
12	Milling machine	1
13	Hydraulic power hacksaw	1
14	Wood turning lathe	1
15	Bench wood lathe machine	1
16	Bench vices 4 inches	30
17	Bench vices 5 inches	8
18	Bench vices 6 inches	2
19	Carpenter vices 7 inches	20
20	Pipe vices	2
21	Arc welding transformer( TPA 301, Advani)	1
22	Arc welding transformer, 16.5 KVA	1
23	Arc welding transformer (415 V AC, 3 PH, 50 Hz, 60-400 A)	1
24	Arc welding transformer (SS-400 ,Panasonic)	1
25	MIG welding outfit (3 phase, 415 V, 17 KVA, 50A-400 A DC O/P)	1
26	TIG welding HF console with TIG cable and torch (440 V,3 phase, 50 Hz)	1

### 4. THEORY OF MACHINES

Sl. No.	Equipment	Qty.
1	Universal Governor Apparatus	1
2	Motorised Gyroscope	1
3	Static and Dynamic Apparatus	1
4	Vib Lab(Universal Vibration Apparatus) in 3 parts covering 11 experiments	1

**5. HEAT AND MASS TRANSFER**

Sl. No.	Equipment	Qty.
1	Thermal Conductivity of Insulating Powder	1
2	Heat transfer from a pin apparatus	1
3	Stefan Boltzmann Apparatus	1
4	Parallel Flow counter flow Heat exchanger	1

**6. HYDRAULICS MACHINES**

Sl. No.	Equipment	Qty.
1	Reciprocating Pump Test Rig (Constant speed)	1
2	Pelton Wheel Turbine Test rig with 5 HP Kirloskar motor	1
3	Centrifugal pump test rig-variable speed, single stage with 1 hp PMDC motor & speed controller unit	1
4	Centrifugal Blower Test Rig	1
5	Single stage Reciprocating compressor Test Rig	1
6	Gear pump test rig	1

**7. MECHATRONICS**

Sl. No.	Equipment	Qty.
1	PLC Trainer kit	1
2	Study of i/p & p/i	1
3	Temperature control trainer(SCADA)	1
4	Pressure control trainer(SCADA)	1
5	Control valve characteristics	1
6	Lab View Full Development System	10 users
7	USB 6009 DAQ card	1
8	Pneumatic Trainer kit	1
9	8051 microcontroller	1
10	Stepper Motor Interface	1
11	Seven segment LED matrix keyboard	1
12	Labview Vision Module	1 user
13	NI MY RIO data acquisition device	1
14	Robotics Kit	8 Nos.

**8. METROLOGY**

Sl. No.	Equipment	Qty.
1.	Linear variable differential transformer	1
2	Strain gauge	1
3	Load cell	1
4	Floating Carriage Micrometer	1
5	Outside Micrometer	1
6	Outside digit micrometer	1
7	Dial Indicator	1
8	Magnetic Stand	1
9	Precision spirit level	1
10	Vernier callipers	1
11	Straight edge 300 mm	1
12	Vernier height gauge	1
13	Slip gauges 121 pieces	1
14	Accessories for slip gauges	1
15	Sine bar 200 mm	1
16	Digital Vernier Caliper	1

**9. CAD/CAM**

Sl. No.	Equipment	Qty.
1.	ANSYS Academic Teaching Introductory Version 14.5 <ul style="list-style-type: none"> <li>• ANSYS ( Structural Analysis)</li> <li>• CFX/FLUENT (CFD analysis)</li> <li>• Workbench (Modelling)</li> </ul>	25 users
2	Solidworks EDU Edition 2014-15 (Bundle) CAD+CAE+MasterCAM	100 users (CAD+CAE) 20 seats (MasterCAM)
3	Minitab Software	1 user
4	3D Printer	1 No.

**10. REFRIGERATION AND AIR CONDITIONING**

Sl. No.	Equipment	Qty.
1	Refrigeration Trainer	1
2	Ice Plant Tutor	1
3	Cut section Of Ref. comp.	1
4	Mechanical Heat Pump	1
5	Vapour Absorption Trainer	1

## 11. Automobile Laboratory

Sr. No.	Particulars	Qty
1	Demonstration Chassis Working With Carburetor Vehicle	01
2	Cut Model Of Four Stroke Single Cylinder Petrol Engine	01
3	Cut Model Of Two Stroke Single Cylinder Petrol Engine	01
4	Cut Model Of Worm & Roller Type Steering Gearbox	01
5	Cut Model Of Synchnous Gearbox	01
6	Cut Model Of Five Speed Manual Transmission	01
7	Cut Model Of Single Plate Coil Spring Clutch	01
8	Cut Model Of Single Plate Diaphragm Clutch	01
9	Cut Model Of Centrifugal Clutch - Honda Activa	01
10	Cut Model Of Maruthi Car Wiring System	01
11	Demonstration Board Of Ignition System Of 4 Wheeler	01
12	Cut Model Of Alkaline Battery	01
13	Cut Model Of Complete One Side Macpherson Suspension	01
14	Cut Model Of Rotary Pump	01
15	Cut Model Of Oil Pump External	01
16	Cut Model Of Vacuum Pump	01
17	Cut Model Of Distributor Type FIP	01
18	Cut Model Of Dynamo	01
19	Model Of Air Brake System Working	01
20	Cut Section Model Of Maruti 800cc MPFI Engine With Gearbox, Clutch & Radiator	01
21	Cut Section Model Of Single Cylinder Four Stroke Diesel Engine	01
22	Cut Section Model Of Rack & Pinion Type Steering Gearbox	01
23	Cut Section Model Of Power Steering	01
24	Cut Section Model Of Slidingmesh Gearbox	01
25	Demonstration Board Of Fuel Supply System Of Petrol Engine	01
26	Demonstration Board Of Fuel Supply System Of Diesel Engine	01
27	Cut Section Model Of Both Side Double With Bone Suspension With Drive Shaft	01
28	Mahindra 540 Diesel Engine Running Condition	01
29	Ambassador Isuzu Diesel Engine Running Condition	01
30	Cut Section Model Of Inline Type FIP	01
31	BMW Engine & Transmission System	01

### 12. Equipments in Material Science Laboratory

Sl. No.	Equipment	Qty.
1	Hardness Tester	1
2	Magnetic Flaw detection kit	1
3	Metallurgical Microscope	1
4	Disk Polishing Machine	1
6	Fatigue Testing Machine	1
7	Cupping Testing Machine	1

### 13. CNC Centre

Sl. No.	Equipment	Qty.
1	HASS VMC 12000RPM Machine	1
2	Gedee Wheeler CNC Machine 6000RPM	1

### 14. Advanced Welding Centre

Sl. No.	Equipment	Qty.
1	TIG welding HF console with TIG cable and torch (440 V,3 phase, 50 Hz), TPSi 320 C (Compact)	1
2	Magicwave 230i along with TIG accessories	1
3	Transpocket 150 along with Welding Holder, Earth Clamp & Welding cables	1

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