LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF MECHACNICAL ENGINEERING

MACHINE TOOLS LAB

This laboratory is aimed at providing an introduction to the Know-how of common processes used in industries for manufacturing parts by removal of material in a controlled manner. Auxiliary methods for machining to desired accuracy and quality will also be covered. The emphasis throughout the laboratory course will be on understanding the basic features of the processes rather than details of constructions of machine, or common practices in manufacturing or acquiring skill in the operation of machines. Evidently, acquaintance with the machine is desirable and the laboratory sessions will provide adequate opportunity for this.

Machine tools Lab Overview	
Area	312.06 Sq.m
Establishment in the year	2001
Total Investment	Rs. 19,64,331/-
Major Equipment	1. **All geared Lathe Machine** 2. Lathe Machines – Heavy Duty, Angle grinder 3. Milling Machine, Surface Grinding, Universal Drilling Machines
Faculty Incharge	**S. Srinivasa reddy, Sr. Asst. Professor**
Technicians	**S. Ajay Babu, D. Ashok Kumar**

R&D Facilities:

1) All geared Lathe Machine, Milling, Grinding, Shaper and Lathe Machines

COURSE EDUCATIONAL OBJECTIVE:

The objectives of this laboratory course is to enable the students learn the basic principles of various machine tools and be able to design and manufacture a machine element.

COURSE OUTCOMES:

After completion of the course student will be able to:

CO1. Exhibit the ability in developing sequence of machining operations required for industry

CO2. Manufacture the components according to specifications using various machine tools.

CO3. Analyze speed regulations of governors and observe the gyroscopic and cam jump phenomena.

CO4. Analyze the effects of various vibrations.

Equipment details in Machine tools Laboratory:

S. No	Name of the Equipment	Price in Rs.	Quantity	Total Amount in Rs.
1	Lathe 4 ½ ‘ bed (DEEPAK -4 NO)	30,426.00	04	1,21,707.00
2	Lathe 4 ½ ‘ bed (DEEPAK -9 NO)	38,390.00	09	3,45,510.00
3	Lathe 4 ½ ‘ bed (universal -01 NO)	57,574.00	01	57,574.00
4	Lathe 4 JAW 7 ‘ bed (UNIVERSAL)	62,400.00	01	62,400.00
5	Lathe 6 ½ BED (missal)	79,9809.00	01	79,809.00
6	Lathe 6 ½ BED (orient)	48,597.00	01	48,597.00
7	Capstan & Turret Lathe (Universal)	73,709.00	01	73,709.00
8	Radial Drilling Machine (Universal)	44,220.00	01	44,220.00
9	Planar Machine (UNIVERSAL)	1,87,155.00	01	1,87,155.00
10	Piller Drilling Machine (Universal)	15,350.00	01	15,350.00
11	Milling Machine (UNIVERSAL)	96,075.00	01	96,075.00
12	Slotting Machine (UNIVERSAL)	30,409.00	01	30,409.00
13	Shaping Machine (UNIVERSAL)	48,464.00	01	48,464.00
14	Surface Grinding (UNIVERSAL)	45,968.00	02	91,936.00
15	Tool & Cutter Grinder (UNIVERSAL)	51,798.00	01	51,798.00
16	Milling Adda (UNIVERSAL)	10,816.00	01	10,816.00
17	Bench Grinder (UNIVERSAL)	4,784.00	01	4,784.00
18	Power Hacksaw (UNIVERSAL)	31,843.00	01	31,843.00
19	Lathe Tool Dynamometer (RMS CONTROLS)	44,937.00	01	44,937.00
20	High Speed Cutting Machine (DEWALT)	10,290.00	01	10,290.00
21	All Geared Lathe	5,06,948.00	01	5,06,948.00
GRAND TOTAL (Rs. Nineteen lakh sixty four thousand three hundred thirty one only)				**19,64,331.00**

List of experiments:

1. To perform the step turning operation and taper turning operation on a given M.S. work piece
2. To perform knurling operation and threading operation on a given M.S. work piece
3. To form and grind the given work piece (square rod) into single point cutting tool
4. To cut a rectangular groove (or key way) with given dimensions on work piece using Shaping machine.
5. To perform drilling and tapping operations on a given M.S. plate using universal drilling machine.
6. To prepare a smooth flat surface on M.S.flat using surface Grinding machine.
7. To cut spur gear on a given M.S.Round blank using milling machine.

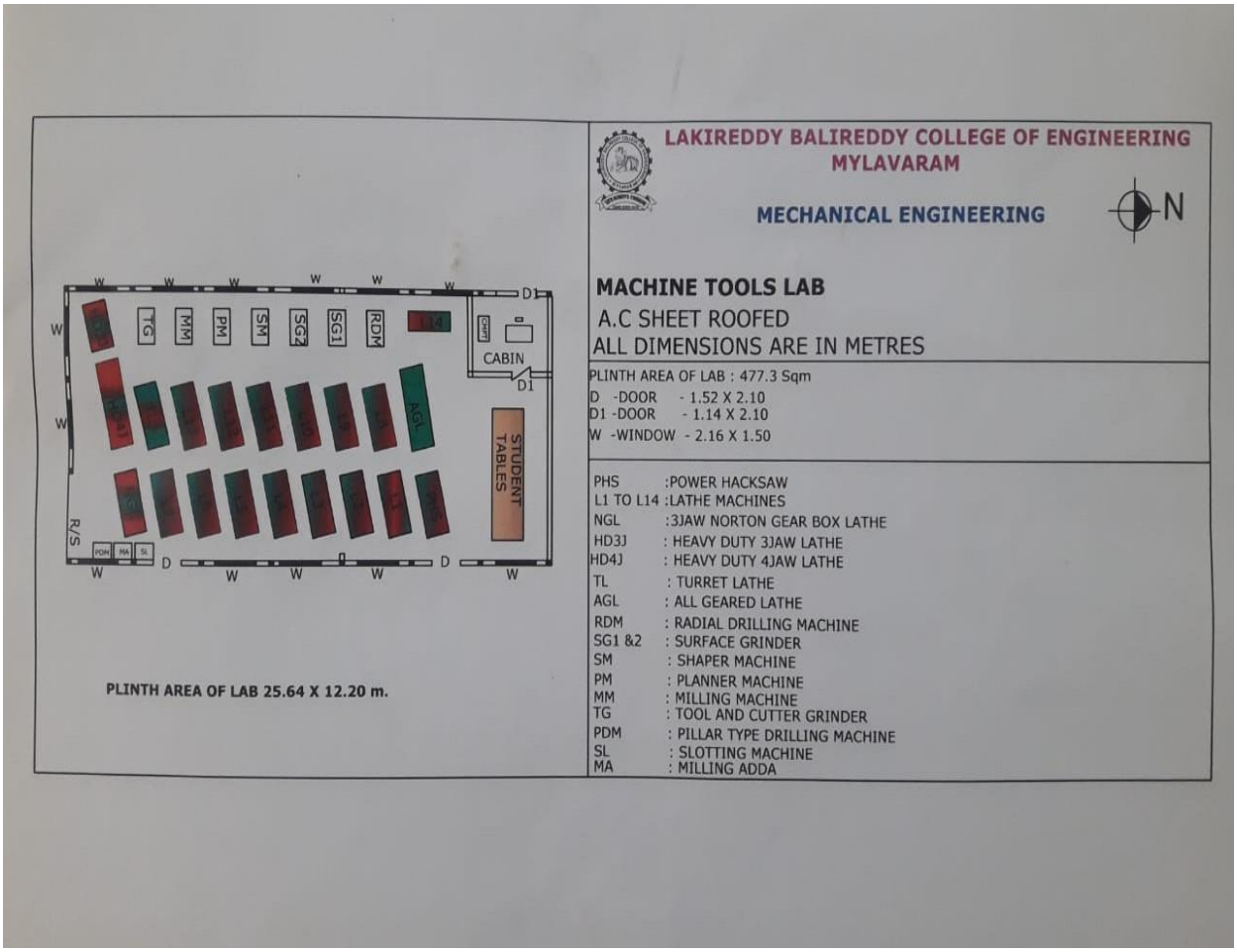
Study experiments:

1. Study the principal parts and specifications of Lathe Machine.
2. Study the principal parts and specifications of Capstan and Torrent Lathe Machine
3. Study the principal parts and specifications of Universal Drilling Machine
4. Study the principal parts and specifications of Horizontal Milling Machine
5. Study the principal parts and specifications of Shaper Machine
6. Study the principal parts and specifications of Planar Machine
7. Study the principal parts and specifications of Slotter Machine
8. Study the principal parts and specifications of Surface Grinding Machine
9. Study the principal parts and specifications of Tool Cutter
10. Study the principal parts and specifications of CNC Turing Machine
11. Study the principal parts and specifications of CNC Milling Machine

Photo Gallery

Over view of Machine Tools Lab

All Geared Lathe



LAB LAYOUT

MILLING MACHINE

MAIN SPECIFICATIONS:

TABLE	UNITS	VALUE
Face of column	mm	260
Table-length & width	mm	1220x260
T –slot no.& size	mm	3x13
TRAVEL		
Longitudinal traverse	mm	610
Vertical traverse	mm	460
Cross traverse	mm	205
SPINDLE		
No. of speeds		9
Speed range	mm	50-750

ALL GEARED LATHE

SPECIFICATIONS:

Type of bed	:	gap bed
Length of bed	:	2440 mm
Swing over bed	:	410 mm
Spindle RPM range	:	30-1250 mm
Spndle hollow	:	42 mm
Speed positions	:	8/16
Driving pulley speed	:	650
Range of longitudinal feeds	:	0.05-0.8 mm/rev
No. of feeds	:	65

TURRET LATHE

SPECIFICATIONS:

Collect capacity	:	11/4”
Hole through spindle	:	1- 5/16
spindle speeds	:	300-1400 (RPM)
No. of speeds	:	6
Max.turning dia,over truce slide	:	4 ¾”
Useful stroke of turret carriage	:	5”
Avg. Distance b/w spindle & turret carriage	:	8 - 11/16”

SLOTTING MACHINE

SPECIFICATIONS:

Stroke	:	Adjustable stroke (10-150 mm)
Longitudinal movement	:	200 mm
Cross movement	:	110 mm
Speed adjustment	:	3speeds
Ram adjustments	:	150

RADIAL DRILLING MACHINE

SPECIFICATIONS :

Spindle travel	: 220 mm
Spindle speeds	: 8

WORK RANGE

Drilling radias min. To max.	: 440-900 mm
Vertical power movement of arm	: 710
Horizontal movement of drilling head	: 440
Swing of arm	: 360

SURFACE GRINDER

SPECIFICATIONS:

Working surface of grinder area	: 225x500 mm
Magnetic table travel	: 250x525
Vertical feed graduation	: 0.01 mm
Spindle speed	: 2800 (RPM)

Laboratory utilization

S. No	Laboratory Name	Branch(s)
1	Machine Tools Lab	Mechanical-V Semester
2	Mini Projects	Mechanical, Aerospace
3	Major Projects	Mechanical, Aerospace
4	Project based Lab Experimentation	Mechanical, Aerospace