II B. Tech – II Semester

(20ME4105) MACHINE TOOLS LAB

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
15	35	50	-	-	3	1.5

Pre-Requisites: Machine Tools

Course Objectives:

- The students are required to understand the parts of various machine tools and operate them.
- They are required to understand the different shapes of products that can be produced on these machine tools.

Note: Minimum 10 Experiments from the below

1. Introduction of general-purpose machines -Lathe, drilling machine, Milling machine, Shaper, Planning machine, Slotting machine, Cylindrical grinder, Surface grinder and Tool and cutter grinder.
2. Operations on Lathe machines
   (i) Step turning and Knurling
   (ii) Taper turning and Knurling
   (iii) Thread cutting and knurling
   (iv) Drilling and tapping
3. Operations on Drilling machine
   (i) Drilling, reaming and tapping
   (ii) Rectangular drilling
   (iii) Circumferential drilling
4. Operations on Shaping machine
   (i) Round to square
   (ii) Round to Hexagonal
5. Operations on Slotter
   (i) Keyway (T –slot)
   (ii) Keyway cutting
6. Operations on milling machines
   (i) Indexing
   (ii) Gear manufacturing

Course Outcomes:

A student who successfully fulfills this course requirement will be able to:

S. No	Course Outcome	BTL
CO1	Identify methods and devices for measurement of length, angle, gear& thread parameters, surface roughness and geometric features of parts.	L4
CO2	Understand working of lathe, shaper, planner, drilling, milling and grinding machines.	L4
CO3	Comprehend speed and feed mechanisms of machine tools.	L4
CO4	Estimate machining times for machining operations on machine tools.	L4

Correlation of Cos with POs & PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	0	1	0	0	0	1	1	0	1	2	2
CO2	3	3	1	1	1	1	0	0	0	1	1	2	3	2
CO3	3	3	2	1	1	2	1	0	1	2	1	2	2	2
CO4	3	3	3	1	1	1	1	0	2	1	1	1	3	2

Virtual Lab Links:

- https://virtlabs.tech/metal-cutting/
- https://fab-coep.vlabs.ac.in/exp1/Theory.html
- http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/machine_tools/labs/exp1/theory.php