

II Year II Semester

L T P C

Code:20ME4105

0 0 3 1.5

MACHINE TOOLS LAB

Course Objectives:

1. The students are required to understand the parts of various machine tools and operate them.
2. 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

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

Course Outcomes:

At the end of the course, the student will be able to:

- CO1: Identify methods and devices for measurement of length, angle, gear& thread parameters, surface roughness and geometric features of parts.
- CO2: Understand working of lathe, shaper, planner, drilling, milling and grinding machines.
- CO3: Comprehend speed and feed mechanisms of machine tools.
- CO4: Estimate machining times for machining operations on machine tools