

COMPUTER AIDED MACHINE DRAWING LAB

Description of the Laboratory:

A Mechanical Engineer must use the graphic language as powerful means of communication with others for conveying ideas on technical matters. However, for effective exchange of ideas with others, the engineer must have proficiency in (i) language, both written and oral, (ii) symbols associated with basic sciences and (iii) the graphic language. This efficacy is further enhanced when computer is involved.

Computer Aided Machine Drawing pertains to machine parts or components. It is presented through a number of orthographic views, so that the size and shape of the component is fully understood. Part drawings and Assembly drawings belong to this classification.

Part Drawing Component or Part Drawing is a detailed drawing of a component to facilitate its manufacture. All the principles of orthographic projection and the techniques of graphic representation must be followed to communicate the details in a Part Drawing.

Assembly Drawing A drawing that shows the various parts of a machine in their correct working locations is an Assembly Drawing.

In this lab, students learn to develop multiple views of machine components ranging from simple to complex. Also, students gain knowledge in Assembled and Part drawings with suitable tolerances using conventions and CAD software.

List of Experiments:

- 1. Exercises on machine drawing conventions using drafting software.** (Any three exercises)
 - a) Conventional representation of materials.
 - b) Conventional representation of machine components.
 - c) Conventional representation sectional views.
 - d) Conventional representation of limits, Fits and tolerances-form and positional tolerances and machining symbols.
 - e) Conventional representation of dimensioning on the drawings.
- 2. Exercises on drawing of machine elements and simple parts using drafting software.** (Any three exercises)

- a) Types of thread profiles-Square, Metric, ACME and Worm.
- b) Bolted joints-Hexagonal bolt and nut, Square bolt and nut.
- c) Locking arrangements for nuts-Locking by split pin, castle nut.
- d) Foundation bolts- Eye, Bent and Rag foundation bolts.
- e) Keys-Saddle key, Sunk key, Woodruff key, Kennedy key.
- f) Riveted joints-Single riveted lap joints, Butt joints with single cover straps(Chain and zigzag using snap head riveters).

3. Assembly drawings

Drawing of assembled views for the part drawings of the following, using conventions and easy drawing proportions. Representation of limits, fits and tolerances on assembly drawings. (Any three assembly drawings represented with dimensional and geometric tolerances)

- a) Stuffing box
- b) Pipe vice
- c) Eccentric
- d) Screw jack

4. Part drawings

Preparation of part drawing representing limits fits and tolerances and surface finish indications (Below mentioned part drawings ONLY).

- a) Petrol Engine connecting rod
- b) Single tool post
- c) Plummer block

Computer system configuration:

S.No	Equipment/Software	Description	Total No.
1.	Lenovo Think Centre Desktop	Intel core i3-2120 CPU 3.30GHz 8 GB RAM, 500GB HDD ZOTAC GT 440 Graphic Card, Lenovo Keyboard & Mouse 18.5" LG LED Monitor	77

List of Softwares:

- a) Solid Works - 2016
- b) AUTOCAD-2013
- c) CREO Version 2.0

Photographs of the Lab/Equipment:



