



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**

**DEPARTMENT OF MECHANICAL ENGINEERING**

<b>II Year - I Semester</b>		<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>1</b>	<b>0</b>	<b>3</b>	<b>2.5</b>
<b>MACHINE DRAWING</b>					

**Course Objective:** *The student will acquire knowledge in national and International standards while drawing machine components students will also familiarize in drawing assembly, orthographic and sectional views of various machine components.*

**Machine Drawing Conventions:**

Need for drawing conventions – introduction to IS conventions-Standardization-Interchangeability-Selective assembly-Tolerance

- a) Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.
- b) Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned.
- c) Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved tapered features and surface finish indication
- d) Title boxes, their size, location and details - common abbreviations & their liberal usage
- e) Types of Drawings – working drawings for machine parts.

**PART-A**

**I. Drawing of Machine Elements and simple parts**

**Objective: To provide basic understanding and drawing practice of various joint, simple mechanical parts**

Selection of Views, additional views for the following machine elements and parts with every drawing proportions.

- a) Popular forms of Screw threads, bolts, nuts, stud bolts, tap bolts, set screws.
- b) Keys, cotter joints, knuckle joint, Hook's joint
- c) Riveted joints for plates
- d) Shaft couplings.
- e) Journal, pivot and collar and foot step bearings.

**PART-B**

**II. Assembly Drawings:**

**Objective: The student will be able to draw the assembly from the individual part drawing.**

Drawings of assembled views for the part drawings of the following using conventions and easy drawing proportions.

- a) Engine parts –Gear pump, Fuel pump, petrol Engine connecting rod, piston, stuffing box and eccentric assembly.
- b) Other machine parts - Screws jack, Machine swivel vice, Plummer block, Tailstock and Tool post.

**III. Manufacturing Drawing**

Introduction of Limits and fits, fundamental deviations for Hole based and Shaft based systems, alpha numeric designation of limits & fits. Types of Fits. Form and positional tolerances.



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Conventional practices of indicating limits and fits, geometrical form and position tolerances, surface finish and surface treatments requirements. Study of Examples involving selection of fits and calculation of limits. Suggestion of suitable fits for mating parts.

Representation of limits fits and tolerances for mating parts. Use any four parts of above assembly drawings and prepare manufacturing drawing with dimensional and geometric tolerances.

**TEXT BOOKS:**

1. Machine Drawing – N.Siddeswar, K.Kannaiah & V.V.S.Sastry - TMH
2. Machine Drawing –K.L.Narayana, P.Kannaiah & K. Venkata Reddy / New Age/ Publishers
3. Production Drawing- K.L.Narayana, P.Kannaiah & K. Venkata Reddy / New Age/ Publishers

**REFERENCES:**

1. Machine Drawing – P.S.Gill,
2. Machine Drawing – Luzzader
3. Machine Drawing – Rajput
4. Machine Drawing – N.D. Junnarkar, Pearson
5. Machine Drawing – Ajeeth Singh, McGraw Hill
6. Machine Drawing – KC John, PHI
7. Machine Drawing – B Battacharya, Oxford
8. Machine Drawing – Gowtham and Gowtham, Pearson
9. Machine Drawing- Dhawan R K- S.chand&Company

**Course Outcome:**

- CO1. Draw and represent standard dimensions of different mechanical fasteners and joints and Couplings.
- CO2. Draw different types of bearings showing different components.
- CO3. Assemble components of a machine part and draw the sectional assembly drawing showing the dimensions of all the components of the assembly as per bill of materials
- CO4. Select and represent fits and geometrical form of different mating parts in assembly drawings.
- CO5: To prepare manufacturing drawings indicating fits, tolerances, surface finish and surface treatment requirements.