



C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: - Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: - Mechanical Engineering

SEMESTER: - III **CODE:** - 2TE03MDR1

NAME OF SUBJECT: - Mechanical Drafting

Teaching & Evaluation Scheme:-

| Subject Code | Name of the Subject | Teaching Scheme | | | | | Evaluation Scheme | | | | | | | | |
|------------------|----------------------------|-----------------|----|----|-------|--------|-------------------|-------|-----------------|-------|-------------------|----|------------|-----|-------|
| | | Th | Tu | Pr | Total | Credit | Theory | | | | Practical (Marks) | | | | Total |
| | | | | | | | Sessional Exam | | University Exam | | Internal | | University | | |
| | | | | | | | Marks | Hours | Marks | Hours | Pr/Viva | TW | Pr | | |
| <u>2TE03MDR1</u> | <u>Mechanical Drafting</u> | 02 | 00 | 04 | 06 | 04 | 30 | 1.5 | 70 | 03 | 30 | 20 | ---- | 150 | |

Objective: -

- Use of drawing equipments, instruments and materials.
- Draw the projections, sections, intersections and surface development of various types of solids.
- Draw the projections and sections of simple objects.
- Draw the detail and assembly drawings of various machine assemblies.
- Know about tolerance and to sketch the symbols of machining, welding and piping.

Prerequisites: - Engineering Drawing

Course outline:-

| Sr. No. | Course Contents | Teaching Hours |
|---------|--|----------------|
| 1 | Multi views and Missing Views Representation: Positions of all six views i.e. Top view, Bottom view, Front view, Rear view and R.H. and L.H. Side views in First Angle and Third Angle methods, Multi view drawings from given isometrics drawing / physical object, Missing view drawings from given adequate orthographic views | 4 |
| 2 | Sectional Orthographic: Need of sections, Cutting plane, cutting plane lines and Rules for sectioning and cutting plane lines, Types of sections- full, half, off-set revolved, removed, partial, and aligned, Sectional view drawings from given isometric drawings / physical objects and cutting plane conditions. | 4 |
| 3 | Details and Assembly Drawings: Importance of working drawing and types of working drawing – details and assembly drawing, Details drawing from given assembly, Assembly drawings from given details, Preparing bill of material (part list) | 2 |
| 4 | Projections and Sections of Solids: Types and dimensional specifications of solids (prism, pyramid, cylinder, cone), Projections of solids - in various positions with respect to the reference planes(Parallel, perpendicular and inclined to HP and / or VP.), Sectional views of different solids in given various positions, True shape of section. | 4 |

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|---|--|---|
| 5 | Development of Surfaces: Importance of development of surfaces and methods, Drawing of development of surfaces of prism, pyramid, cylinder and cone –independent, sectioned and combination. | 4 |
| 6 | Intersection of Surfaces: Importance and field where in use, Intersection curve for Intersection / penetration of :Prism and prism, Cylinder and cylinder, Cylinder and prism, Cone and cylinder. | 4 |
| 7 | Computer Graphics: Introduction to Computer Graphics, Requirement and advantages of AutoCAD, Dimensioning system and object selection in AutoCAD, Introduction of various commands used in AutoCAD, Drawings of simple objects by using Rectangular and Isometric snap. | 4 |
| 8 | Drafting, Welding and Piping Symbols: Machining symbols, Geometrical symbols and its interpretation and its Interpretation, Other drafting symbols like dowels, pins, ribs, bearings, etc., Welding symbols and representation of symbols on drawing, Piping symbols and its representation on drawing. | 2 |
| 9 | Screw Threads and Threaded Fasteners: Permanent and Temporary fasteners, Sketches of threads (square, acme, knuckle, Internal – external threads, Left hand – right hand threads, Single & multi start threads), Sketches of studs (cap screws, machine screws, set screws), Sketches of bolts & nut (hexagonal, square).assembly, Sketches of rivets (snap, pan, countersunk and conical head), Sketches of keys. | - |

List of Experiments:-

- **Multi views and Missing Views:**
Given the pictorial view, draw multi views. - One problem, Given adequate minimum views, draw additional view/s as asked.-One problem, Student will select one object. The same will be measured by student and will draw multi views. The selected object has to be approved by Teacher. - One problem,(Multi views include All six views like Elevation, Plan, Rear view, Bottom view, Right hand side view and Left hand side view.
- **Sectional Views:**
Given pictorial view with cutting plane/s, draw the sectional views as asked. – Two problems, Student will select one object; The same will be measured by student and will draw the sectional views as asked. – One problem.
- **Details Drawings:**
Draw the details of all parts for the assembly selected and sketched as student activity.
- **Assembly Drawings:**
Draw the assembly of all parts drawn for Sheet No.3. This includes minimum one sectional view. Include the parts list also.
- **Projections of Solids:**
Draw the projection of solids- 4 problems.(Prism, Pyramid, Cylinder and Cone.).
- **Sections of Solids:**
Draw the sections of solids and true shape of each sections - 4 problems,(Prism,Pyramid,Cylinder and Cone).
- **Surface Development:**
Draw development of surface of prism, pyramid, cylinder and cone – independent, sectioned and combination. - 4 problems.

- **Intersection and Penetration:**
Draw the intersection curves- 4 problems, (Prism and prism-Cylinder and cylinder- Cylinder and prism- Cone and cylinder).
- **Intersection and Penetration:**
Draw the intersection curves- 4 problems, (Prism and prism-Cylinder and cylinder- Cylinder and prism- Cone and cylinder).
- **Computer Graphics:**
Draw 2D views of given pictorial drawing – 2 problems (One of the problems, one view will be a sectional view), Draw Isometric drawing of given views. – One problem, Print out the command used – Prints of all drawings and commands should be attached in a drawing sheet.
- **Sketch Book Work:**
Draw machining symbols, Welding symbols, Piping symbols and Screw threads and fasteners as per given data and directed by teacher. Also draw all sheets in sketch book.

Learning Outcomes:-

- Explain projections and methods of projections, multi views and missing views.
- Explain section, types of sections and terms related with section i. e. section line and true shape of section.
- Draw the multi views, missing views and sectional views.
- Know about the details and assembly drawings and draw views as per given data.
- Know about the types of solids, its elements and positions of solids with reference planes.
- Draw projections, sections of solids and development and intersection of surfaces.
- Know about the machining, welding and piping symbols and sketch them. Also know about the screw threads, its shapes, fasteners, its applications and sketch them.

Books Recommended:-

- Engineering Drawing, N.D.Bhatt, Charotar Publishing House, Anand.
- Engineering Drawing, K.R.Gopalakrishna, Subhash Publications, Bangalore.
- Engineering Drawing, P.J.Shah, S.Chand, New Delhi.
- Engineering Graphics and drawing, P. S. Gill, S. K. Kataria & Sons, Delhi.
- Machine Drawing, P. S. Gill, S. K. Kataria & Sons, Delhi.
- Mechanical Drafting, Vasani & Sharma, Atul Prakashan, Ahmadabad.
- Engineering Graphics, M.B.Shah & B.C.Rana, Pearsons.