

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
DEPARTMENT OF INDUSTRIAL ENGINEERING AND MANAGEMENT

Title of subject	:	Engineering Drawing & CAD (INM111) 04 (03+01)
Discipline	:	Industrial Engineering and Management
Semester	:	(1 st Semester 1 st Year)
Effective	:	20-Batch and onwards
Assessment	:	20% Sessional, 20% Mid Semester, 60% Final
	:	Semester Examination.
Credit Hours	:	Th=03&Pr = 01
Marks	:	Th: 100&Pr: 50
Minimum Contact Hours	:	Th: 45 &Pr: 45

Course Learning Outcomes

After completion of this course each student would be able to;

CLO	Description	Taxonomy Level	PLO
1	<u>DESCRIBE</u> the CAD and conventions of engineering drawing for producing the drawing of objects.	C2	1
2	<u>PRACTICE</u> the orthographic projections of geometrical constructions.	P3	3
3	<u>IMITATE</u> the drawing of various Machine components.	P3	9

Course Contents:

Introduction: Definition, Drawing instruments and their proper use, Dimensions and dimensioning, **Lettering**.

Geometric Drawing: Orthographic Projections, Planes of Projection, **Projection of Points**, Projections of Straight lines, Traces, True length, and True inclinations of lines Problems. Projection of Planes, Types and traces of Planes, Problems, Projection of Solids, Types of Solids and Problems (By Alteration of Projection), Section and Intersection of Solids and Problems on each type. Development of Surfaces.

Machine Drawing: Rivets and Riveted joints, Screws, Threads, Bolt & Nut, Couplings, Bearing, Keys & Cotters, Pulleys, and the assembly drawing of simple machine component.

Computer Aided Design (CAD): **Introduction to CAD (SpectraCAD-M) software, Introduction to Computer Aided Manufacturing (CAM) and Computer Numerical Control (CNC), Terminology of CAD, coordinate systems**, Basic commands (DRAW, MODIFY, **SNAP, MEASURE, FILLET, MIRROR, ARC, TRIM**, PRINT), Creating text box, and Dimensioning.

Practical/Lab

CLO	Description	Taxonomy Level	PLO
1	PRACTICE the drawing of various geometric constructions and machine components through drawing instruments and various Entities through CAD software.	P3	5
2	PRODUCE open-ended lab drawing within in the scope of Engineering Drawing and CAD.	P4	12
3	RESPOND to rapidly developing/arising situations where they must express opinion regarding a problem.	A2	4

Note: Practicals will be based on Theory:

Recommended Books:

- Engineering Graphics with Auto CAD by D.M.Kulkarani, PHI Learning, New Delhi, Latest Edition.
- CAD/CAM Computer –Aided Design and Manufacturing, by MilellP.Groover, Prentice Hall, New Delhi, Latest Edition.
- Machine Drawing by N.Sidheswar, Tata McGraw-Hill Publishing, New Delhi, Latest Edition Engineering Drawing : With an introduction to CAD BY Dhanajay, A.Jolhe, Tata McGraw-Hill Publishing, New Delhi, Latest Edition A Text book of Engineering Drawing : in first angle Projection by Er.R.K.Dhawan, S.Chand, New Delhi, Latest Edition.
- A Text book of Engineering Drawing in first angle Projection by Er.R.K.Dhawan, S.Chand, New Delhi, Latest Edition.