ENGINEERING DRAWING II

Course code: ME 104

Lecturer: 1 **Year: I**
Tutorial: 0 **Part: II**
Practical: 3 **Course Credit: 1**
Course Objective:

To develop the concept of sectional views, pictorial drawing, and working drawing. To make familiar with basic symbols used in different engineering practices.

	Teaching Schedule Hours/Week			Evaluation Scheme				
				Internal Evaluation		Final Evaluation		Total
	Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	100
Cr	1	0	3		60	-	40	

Unit 1: Orthographic Views and Sectional Views (Conventional Practices) (12 hours)

1.1. Orthographic Views: Half views and partial views, treatment of unimportant Intersections, Aligned views, Treatment of Radially Arranged Features, and Representation of Fillets and Rounds.
1.2. Sectional views: Conventions for Ribs, Webs, and Spokes in sectional views, Broken Section, Removed Section, Revolved Section, Offset Section, Phantom Section, and Auxiliary section views.
1.3. Simplified Representation of Standard Machine Elements.

Unit 2: Pictorial Drawing (20 hours)

2.1 Introduction: Classification, Advantages and Disadvantages
2.2 Axonometric Projection: Isometric Projection and Isometric Drawing
- 2.2.1 Isometric Drawing Procedure
- 2.2.2 Isometric and Non-isometric Lines and Surfaces
- 2.2.3 Angles, Circles, circular Arcs, Irregular Curves in Isometric drawings
- 2.2.4 Isometric sectional views

2.3 Oblique Projection and Oblique Drawing
- 2.3.1 Procedure for Making Oblique Drawing
- 2.3.2 Rules for Placing Objects in Oblique Drawing
- 2.3.3 Angles, Curves, and Circular Arcs in Oblique Drawing

2.4 Perspective projection
- 2.4.1 Introduction to Perspective Projection, Difference with Isometric Projection
- 2.4.2 Various Terms Used in Perspective Projection
- 2.4.3 Types: Parallel and Angular Perspective
- 2.4.4 Selection of Station Point

Unit 3: Basic concepts with different Machine components and conventions (8 hours)

3.1 Limit Dimensioning and Machining Symbols
3.1.1 Limits, Fits and Tolerances
3.1.2 Machining Symbols and Surface Finishing
3.2 Nuts, Bolts and Threads
3.2.1 Terms and nomenclatures of threads, forms of screw threads
3.2.2 Detailed and Simplified Representation: Internal and External Threads
3.2.3 Threads dimensioning
3.2.4 Conventional Symbols for Nuts and Bolts, Standard Nuts and Bolts: Hexagonal Head and Square Head

3.3 Welding and Riveting
3.3.1 Welding symbols, Types of welds, and Types of welded joints
3.3.2 Rivet Symbols, Types of Rivet joints: Lap and Butt joints
3.3.3 Forms and Proportions for Rivet Heads

3.4 Familiarization with Graphic symbols and conventions

3.4.1 Standard symbols for Civil, Structural, and Agricultural components

3.4.2 Standard symbols for Electrical, Mechanical, Computer, Electronics, communications and Industrial components
3.4.3 Topographical symbols
3.5 Piping symbols and piping drawing

Unit 4: Detailed and Assembly Drawings (20 hours)

4.1 Introduction: Working drawing
4.2 Components of working drawing: Drawing Layout, Bill of materials, Drawing numbers
4.3 Detailed and Assembly Drawings: V-block Clamp, Centring Cone, Couplings, Bearings Antivibration Mounts, Stuffing Boxes Srew Jacks, etc.

Practicals:

1. Practices on Orthographic and sectional Views (both Full and Half Sections)
2. Isometric Drawings: consisting of curved surfaces and sections
3. Oblique Drawing
4. Perspective Drawings
5. Graphical Symbols: Limit, Fit, Tolerances and surface roughness and other engineering fields
6. Detail Drawing and Assembly Drawings
7. Building Drawing

References

1. N.D. Bhatt, “Machine Drawing”, Charotar Publishing House, India.
2. P.S. Grill, “Machine Drawing”, S.K. Kataria and Sons, India
3. R.K. Dhawan, “Machine Drawing”, S. Chand and Company Limited, India.
4. W.J. Luzaddar, “Fundamentals of Engineering Drawing”, Prentice Hall.
5. T.E. French, C.J. Vierck, and R.J. Foster, “Engineering Drawing and Graphic Technology”, Mc Graw Hill Publishing Co.

6. F.E. Giescke, A. Mitchell, H.C. Spencer, and J.T. Dygdone, “Technical Drawing”, Macmillan Publishing Co.

Distribution of marks:
The final evaluation will have questions from all the units. The marks distribution for all the units will be as follows:

		Scheduled Hours	**Marks and Remarks**
Unit 1	**Orthographic Views and Sectional Views**	12	8
Unit 2	**Pictorial Drawing**	20	13
Unit 3	**Basic concepts with different Machine components and conventions**	8	5
Unit 4	**Detailed and Assembly Drawings**	20	14
Total		**60**	**40**

Note: The marks distribution shown in the table above might be subjected to minor changes.