

Subject Code: 1ET4000105	Subject Title: Engineering Graphics
Pre-Requisite	--

Rationale

Engineering graphics is an effective language of engineers. It is the foundation block which strengthens the engineering & technological structure. Moreover, it is the transmitting link between ideas and realization. It is an attempt to develop fundamental understanding and application of engineering graphics. It covers knowledge & application of graphics instruments & also familiarizes the learner about Bureau of Indian standards. The curriculum aims at developing the ability to draw and read various drawings, curves & projections. The subject mainly focuses on use of drawing instruments, developing imagination and translating ideas. Developing the sense of drawing sequence and use of drawing instruments effectively yields not only with productive preparation of computer aided graphics but also yields with effective industrial applications ranging from marking to performance of operations.

Course Objective:

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies:

1. Prepare engineering drawings manually with given geometrical dimensions using prevailing drawing standards and drafting instruments.
2. Visualize the shape of simple object from orthographic views and vice versa.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Total (Marks)
Lecture	Tutorial	Practical	Credit	Theory		Practical		
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment	
2	-	4	4	60	40	20	30	150

SR. NO.	TOPIC	TOTAL THEORY HOURS	WEIGHTAGE (%)
1	Introduction Importance of engineering drawing, engineering drawing instruments and their uses, pencil grades and its applications. Different types of Lines. Types of lettering. Types of Dimensioning methods. (Aligned and Unidirectional)	1	10
2	Geometric Construction Geometric construction related example with line like Bisecting a	2	10

	line, divide a line, etc. Geometric construction related example with angle like bisect an angle, trisect an angle, etc. To construct polygon with different methods (Special method, General Method).		
3	Engineering Curves Classification and application of engineering curves, construction of conic curves (like parabola, ellipse, hyperbola) with different methods, construction of cycloid curve, Archimedean Spiral, Involute of different shapes (like polygon, circle).	6	20
4	Projection of Points and Lines Reference planes, Concept of quadrant. Projection of points. Projection of lines – determination of true length and inclinations for following cases - a) Line parallel to one or both the plane. b) Line perpendicular to one plane. c) Line inclined to one plane and parallel to another plane. d) Line inclined to both the planes.	5	15
5	Projection of Planes Types of Planes. Projection of planes for following different conditions - a) Plane parallel to one of the reference planes. b) Plane inclined to one reference plane and perpendicular to another plane. c) Plane inclined to both reference planes.	5	15
6	Orthographic Projections Method of projections with their symbol – 1 st and 3 rd angle projection. Conversion of simple pictorial views into orthographic views, Illustrative problems on orthographic projection.(Problem restricted up to four views like front view, top view and side views).	6	20
7	Isometric Projections Isometric axis, lines and planes, Isometric scales. Difference between isometric view (projection) and isometric drawing. Conversion of orthographic views into isometric projection containing lines, circles and arcs only.	3	10

List of Practical:

1. Draw Geometric Construction problems.
2. Draw Engineering Curves problems.
3. Draw Projection of points and Lines problems.
4. Draw Projection of Planes problems.
5. Draw Orthographic Projections problems.
6. Draw Isometric Projections problems.

Course Outcome:

After completions of this course, students will able to:

1. Understand and draw different geometrical shapes like polygons, circles and lines with different geometric conditions.
2. Able to draw engineering curves with proficiency and speed as per given dimensions.
3. Find out true shape and size of inclined line and plane.
4. Understand the orthographic views of object containing lines, circles and arc geometry.
5. Understand the isometric view from orthographic views of objects containing lines, circles and arcs

List of References:

1. Engineering Drawing, P. J. Shah, S. Chand Publication, New Delhi.
2. Elements of Engineering Drawing, N. D. Bhatt, Charotar Publishing House, Anand.
3. Engineering Graphics, Arunoday Kumar, Tech-Max Publications, Pune.