ENGINEERING DRAWING

I Semester: CE / AE / ME

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AME001	Foundation	2	-	3	4	30	70	100
Contact Classes: 30	Tutorial Classes: Nil	Practical Classes: 45				Total Classes: 75		

I. COURSE OVERVIEW:

One of the best ways to communicate one's ideas is through some form of picture or drawing. This is especially true for the engineer. An engineering drawing course focuses on usage of drawing instru- ments, lettering, construction of geometric shapes, etc. Students study use of dimensioning, shapes and angles or views of such drawings. Dimensions feature prominently, with focus on interpretation, importance and accurate reflection of dimensions in an engineering drawing. Other areas of study in this course may include projected views, pictorial projections and development of surfaces. This course also gives basic concepts for studying machine drawing, building drawing, circuit drawings etc.

II. OBJECTIVES:

The course should enable the students to:

I. Understand the basic principles of engineering drawing and construction of curves used in engineering field.
II. Apply the knowledge of interpretation of projection in different quadrants.
III. Understand the projections of solids, when it is inclined to both planes simultaneously.
IV. Convert the pictorial views into orthographic view and vice versa.
V. Create intricate details of components through sections and develop its surfaces.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Demonstrate** the instruments used in engineering drawing, conventional representations and placing dimensions for **producing flawless drawings in engineering applications**	Understand
CO 2	**Make use of** principles of orthographic projections for the representation **of three dimensional objects on a plane used inengineering field**	Apply
CO 3	**Draw** the isometric projection of three dimensional objects **for visualization of shape and size of the objects.**	Understand
CO 4	**Draw** the development of surfaces of regular solids and their cut sections **used in sheet metal work for making industrial needs.**	Understand
CO 5	**Visualize** the components by isometric projection by representing three dimensional objects in two dimensions **in technical and engineering drawings.**	Understand
CO 6	**Convert** the orthographic views into pictorial views and vice-versa **fordesigning and manufacturing of components in industries.**	Apply

IV. SYLLABUS:

UNIT-I	FUNDAMENTALS OF ENGINEERING DRAWING, SCALES AND CURVES	Classes: 09

Introduction to engineering drawing: Drawing instruments and accessories, types of line, lettering practice and rules of dimensioning, geometrical constructions, basic geometrical shapes; Scales: Types of scales, units of length and their conversion, construction of scales, plain scale, diagonal scale, vernier scale; Curves used in engineering practice and their constructions; Conic sections, construction of ellipse parabola and hyperbola, special curves, construction of cycloid, epicycloids, hypocycloid and involutes.

UNIT-II	ORTHOGRAPHIC PROJECTION, PROJECTION OF PLANES	Classes: 09
Orthographic projection: Principles of orthographic projections, conventions, first and third angle projections, projection of points, projection of lines, lines inclined to single plane, lines inclined to both the planes, true lengths and traces; Projection of planes: Projection of regular planes, planes inclined to one plane, planes inclined to both planes, projection of planes by auxiliary plane projection method.		
UNIT-III	**PROJECTION OF SOLIDS**	**Classes: 09**
Projection of solids: Projections of regular solid, prisms, cylinders, pyramids, cones. Solids inclined to one plane, solids inclined to both planes, projection of solid by auxiliary plane projection method.		
UNIT-IV	**DEVELOPMENT OF SURFACES, ISOMETRIC PROJECTIONS**	**Classes: 09**
Development of surfaces: Development of lateral surface of right regular solids, prisms, cylinders, pyramids and cones; Isometric projections: Principle of isometric projection, isometric scale, isometric projections and isometric views, isometric projections of planes, prisms, cylinders, pyramids, and cones.		
UNIT-V	**TRANSFORMATION OF PROJECTIONS**	**Classes: 09**
Transformation of projections: Conversion of isometric views to orthographic views and conversion of orthographic views to isometric views.		

Text Books:

1. N.D. Bhatt, "Engineering Drawing", Charotar Publications, 49th Edition, 2012.
2. C. M.Agrawal, Basant Agrawal, "Engineering Drawing'', Tata McGraw Hill, 2nd Edition, 2013.

Reference Books:

1. K. Venugopal, "Engineering Drawing and Graphics",New Age Publications,2nd Edition, 2010.
2. Dhananjay. A. Johle, "Engineering Drawing'',Tata McGraw Hill, 1st Edition, 2008.
3. K. C. John, "Engineering Drawing", PHI Learning Private Limited", 2nd Edition, 2009.

Web References:

1. https://nptel.ac.in/courses/112103019/
2. https://nptel.ac.in/courses/112103019/14

E-Text Book:

1. https://books.google.co.in/books/about/Engineering_Drawing.html?id=_hdOU8kRb2AC

Course Home Page: