

# 19ME101 ENGINEERING GRAPHICS AND DESIGN

Hours Per Week :

L	T	P	C
2	-	2	3

Total Hours :

L	T	P	WARA	SSH/HS	CS	SA	S	BS
30	-	30	20	15	-	-	-	3

## COURSE DESCRIPTION AND OBJECTIVES:

Engineering graphics is the language of engineers and is the most effective way of communicating and sharing technical ideas in the form of pictures/drawings. The objective of this course is to familiarize the students with the conventional concepts of engineering drawing and computer aided drawing.

## COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes.

COs	Course Outcomes	POs
1	Communicate the technical ideas in the form of drawings.	1
2	Apply the drawing skills in representing various geometrical features.	1
3	Develop orthographic projections and isometric views of various objects.	2
4	Estimate the lateral surface area of regular geometrical solids.	2
5	Sketch simple objects and their pictorial views using AutoCAD.	5

## SKILLS:

- ✓ Convert isometric views of objects into orthographic views and vice versa.
- ✓ Visualize the shape of the 3D components.
- ✓ Create pictorial views by using AutoCAD.
- ✓ Understand projections by visualization.



Source:  
[www.gettyimage.in](http://www.gettyimage.in)

**UNIT - I**

**L-6, P-6**

**ENGINEERING CURVES:** Types of lines; Lettering; Dimensioning; Geometric construction - lines, polygons (Angle, ARC, General and Inscribe in circle method), conical curves (General method), ellipse by Oblong method.

**UNIT - II**

**L-6, P-6**

**ORTHOGRAPHIC PROJECTIONS OF POINTS & LINES:** Principles of projection; Projections of points; Projection of straight lines - inclined to one plane, inclined to both planes.

**UNIT - III**

**L-6, P-6**

**PROJECTION OF PLANES:** Projection of planes inclined to one reference plane - triangle, square, circle, regular pentagon and hexagon.

**PROJECTIONS OF SOLIDS:** Projection of solids axis inclined to one reference plane - prism, pyramid, cylinder and cone.

**UNIT - IV**

**L-6, P-6**

**DEVELOPMENT OF SURFACES:** Development of lateral surfaces of simple solids - prisms, pyramids, cylinder and cone.

**ORTHOGRAPHIC VIEWS:** Conversion of pictorial views into orthographic views.

**UNIT - V**

**L-6, P-6**

**DRAFTING USING COMPUTER PACKAGE:** Introduction to 2D modelling software - AutoCAD; Conversion of Isometric view into Orthographic views of simple castings; Conversion of Orthographic views into Isometric view of simple solids - prisms, pyramids, cylinders and cones.

**TEXT BOOKS:**

1. N D Bhatt, "Engineering Drawing", 53<sup>rd</sup> edition, Charotar Publication, 2014.
2. Basant Agrawal and C.M.Agrawal "Engineering Drawing", 2<sup>nd</sup> edition, Tata McGraw-Hill, 2014.

**REFERENCE BOOKS:**

1. J Hole, "Engineering Drawing", 2<sup>nd</sup> edition, Tata McGraw-Hill, 2008.
2. K L Narayana, "Engineering drawing", 2<sup>nd</sup> edition, Scitech Publications, 2008.