# **22ME101 ENGINEERING GRAPHICS**

Hours Per Week :

L	Т	Р	С	
2	0	2	3	

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#### PREREQUISITE KNOWLEDGE: Basics of Geometry

#### 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.

#### MODULE-1

#### 6L+0T+6P=12 Hours

10L+0T+10P=20 Hours

#### **ENGINEERING CURVES:**

Types of lines; Lettering, Dimensioning, Geometric constructions - lines, polygons (Angle, ARC, General and Inscribe in circle method), Conical curves (General method), Ellipse by Oblong method.

#### UNIT-2

UNIT-1

#### ORTHOGRAPHIC PROJECTIONS OF POINTS, LINES & PLANES:

Principles of projection; Projections of points; Projection of straight lines - Inclined to one plane, inclined to both planes; Projection of planes - Inclined to one plane.

#### **PRACTICES:**

- Construction of polygons using different methods (i.e. ARC, Angle, General).
- Inscribe a regular hexagon & pentagon in a circle of the given diameter.
- Tracing of conical curves (Ellipse, Parabola, Hyperbola) by using General Method.
- Draw the projections of the points situated in all the 4 quadrants.
- Draw the projections of a line when it is inclined to one plane (HP or VP).
- Draw the projections of a line when it is inclined to both the planes (HP &VP).
- Draw the projections of a plane when it is inclined to one plane (HP or VP).

#### **MODULE-2**

#### PROJECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES:

**Projections of Solids:** Projection of solids axis inclined to one reference plane - Prisms, pyramids, Cylinder and cone.

**Development of Surfaces:** Development of lateral surfaces of simple solids - Prisms, Pyramids, Cylinder and cone.

#### UNIT-2

UNIT-1

#### ORTHOGRAPHIC VIEWS AND DRAFTING USING COMPUTER PACKAGE:

Orthographic Views: Conversion of pictorial views into orthographic views.

**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.

#### JINI 1-2

## 6L+0T+6P=12 Hours

### 6L+0T+6P=1

#### 10L+0T+10P=20 Hours

# VFSTR



#### 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.

#### PRACTICES:

- Draw the projections of Prisms, when they are inclined to one reference plane (HP or VP).
- Draw the projections of Pyramids, when they are inclined to one reference plane (HP or VP).
- Draw the projections of cylinder & cone, when they are inclined to one reference plane (HP or VP).
- Draw the complete surface development of prisms & pyramids with the given dimensions.
- Draw the complete surface development of cylinder & cone with the given dimensions.
- Draw the orthographic view's (i. e. front view, top view, and side view) of the given pictorial view of the sketches by using AutoCAD.
- Draw the Isometric view of simple solids (Prisms & Pyramids) by using AutoCAD.
- Draw the Isometric view of simple solids (Cylinder & Cone) by using AutoCAD.

#### COURSEOUTCOMES:

Upon successful completion of this course, students will have the ability to:

CO No.	Course Outcomes	Blooms Level	Module No.	Mapping with POs
1	Communicate the technical ideas in the form of drawings.	Apply	1	1,2,3,5
2	Apply the drawing skills in representing various geometrical features.	Apply	1	1,2,3,5
3	Develop orthographic projections and isometric views of various objects.	Apply	1	1,2,3,5
4	Estimate the lateral surface area of regular geometrical solids.	Analyze	2	1,2,3,5
5	Sketch simple objects and their pictorial views using AutoCAD.	Analyze	2	1,2,3,5

#### **TEXT BOOKS:**

- 1. J Hole, "Engineering Drawing", 2nd edition, Tata McGraw-Hill, 2019.
- 2. N D Bhatt, "Engineering Drawing", 53rd edition, Charotar Publication, 2014.

#### **REFERENCE BOOKS:**

- 1. Basant Agrawal and C.M. Agrawal "Engineering Drawing", 2nd edition, Tata Mc Graw- Hill, 2018.
- 2. K L Narayana, "Engineering drawing", 3rd edition, SciTech Publications, 2011.
- 3. Colin H. Simmons, Dennis E. Maguire, Manual of Engineering Drawing, 2nd edition, 2003.