



## GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

### ENGINEERING GRAPHICS

Course Code: GR15A1023  
I Year II Semester

L:1 T:0 P:2 C:3

**Prerequisites:** Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability.

#### Course Objectives

The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation. The emphasis while imparting instructions should be to develop conceptual skills in the students.

#### Course Outcomes

- Ability to describe the conventions and the methods of engineering drawing.
- Ability to demonstrate drafting practices, visualization and projection skills useful for conveying ideas, design and production of components and assemblies in engineering applications.
- Ability to perform basic sketching techniques of engineering components.
- Ability to draw orthographic projections and isometric projections of given engineering components.
- Ability to increasingly use architectural and engineering scales.
- Ability to design Computer Aided Drawing and to form foundation for modern tools in engineering graphics.

#### Unit-I

**INTRODUCTION TO ENGINEERING DRAWING:** Principles of Engineering Graphics and their Significance Drawing Instruments and their Use Conventions in Drawing Lettering BIS Conventions. Curves used in Engineering Practice & their Constructions: a) Conic Sections, b) Cycloid, Epicycloid and Hypocycloid, c) Involute.

**SCALES:** Different types of scales. Plain Scale, Diagonal Scale & Vernier Scale

#### Unit-II

**ORTHOGRAPHIC PROJECTIONS:** Principles of Orthographic Projections Conventions First and Third Angle Projections. Projections of Points and Lines inclined to both planes, True lengths, traces.



### Unit-III

**PROJECTIONS OF PLANES:** Planes parallel, perpendicular and inclined to one of the reference planes. Plane inclined to both the reference planes.

**PROJECTIONS OF SOLIDS:** Projections of Regular Solids inclined to both planes.

### Unit-IV

**SECTIONS OF SOLIDS:** Types of section planes, Section by a plane perpendicular to V.P., Section by a plane perpendicular to H.P.

**DEVELOPMENT OF SURFACES:** Development of Surfaces of Right Regular Solids Prisms, Cylinder, Pyramid, Cone and their parts.

### Unit-V

**ISOMETRIC PROJECTIONS:** Principles of Isometric Projection Isometric Scale Isometric Views Conventions Isometric Views of Lines, Plane Figures, Simple and Compound Solids Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts.

**TRANSFORMATION OF PROJECTIONS:** Conversion of Isometric Views to Orthographic Views Conventions.

### Teaching Methodology

Power point Presentations, Working models, white board & marker

### Text Books

1. Engineering Drawing, N.D. Bhat / Charotar
2. Engineering graphics with Auto CAD- R.B. Choudary/Anuradha Publishers

### Reference Books

1. Engineering Drawing and Graphics, Venugopal / New age.
2. Engineering Drawing- Johle/Tata Macgraw Hill.
3. Engineering Drawing, Narayana and Kannaiah / Sciotech publishers.  
Engineering Drawing, Narayana and Kannaiah / Sciotech publishers.
4. Engineering Drawing Basanth Agrawal/ C M Agrawal; 2e Mc Graw Hill Education