ENGINEERING DRAWING

(Common to CE, ME, AE during I B.Tech., I Semester)
(Only for ECE during I B.Tech., II Semester)

Course Code(s): CE1T5, ME1T5, AE1T5, EC2T6 **Credits: 3**
Lecture: 2 periods/week **Internal assessment: 30 marks**
Lab Practice: 4 periods /week **Semester end examination: 70 marks**

COURSE OBJECTIVES:

1. Explain about conics, curves and orthographic projection of geometrical entities

2. Transform orthographic to isometric projections and isometric to orthographic projections.

COURSE OUTCOMES:

At the end of course the student will be able to draw:

1. Regular polygons and construct scales
2. Various conics sections and curves.
3. Orthographic projections of geometrical entities
4. Orthographic views of sectioned solids
5. Isometric views and orthographic views.

Pre Requisites: Mathematics

UNIT-I

INTRODUCTION TO ENGINEERING DRAWING:

Use of Drawing instruments, Dimensioning, Representation of various types of lines, Geometrical constructions. POLYGONS-construction of regular polygons using given length of a side.
SCALES: Construction and use of plain and diagonal scales.

CONIC SECTIONS:

CONIC SECTIONS - General construction method for ellipse, parabola and hyperbola. Special methods for conic sections.
CURVES USED IN ENGINEERING PRACTICE - Cycloidal curves- Cycloid, Epicycloid and Hypocycloid.

UNIT – II

PROJECTION OF POINTS AND PROJECTION OF STRAIGHT LINES:

PRINCIPLES OF ORTHOGRAPHIC PROJECTIONS- Projections of points; Projections of straight lines parallel to both the reference planes, parallel to one and inclined to other reference

plane and inclined to both the reference planes; Determination of true lengths, angle of inclinations and traces.

PROJECTIONS OF PLANES:
PROJECTIONS OF REGULAR PLANES-parallel to one reference plane and perpendicular to the other reference plane, parallel to one reference plane and inclined to other reference plane, perpendicular to both the reference planes, inclined to both the reference planes.

UNIT-III
PROJECTIONS OF SOLIDS:
PROJECTIONS OF SIMPLE SOLIDS- Cubes, Prisms, Pyramids, Cylinders and Cones with axis perpendicular to one reference plane and parallel to other reference plane, with axis inclined to one reference plane, with axis inclined to both the reference planes.

UNIT – IV
SECTION OF SOLIDS:
SECTIONS OF SOLIDS- Cubes, Prisms, Pyramids, Cylinders and Cones- True shapes of sections. (Limited to the Section Planes perpendicular to one of the Principal Planes).

UNIT –V
TRANSFORMATION OF PROJECTIONS:
PRINCIPLES OF ISOMETRIC PROJECTION – Isometric Scale – Isometric Views–Isometric Views of Lines, Plane Figures, Conversion of Isometric Views to Orthographic Views – Conversion of Orthographic Views to Isometric Views. (Treatment limited to simple objects)

LEARNING RESOURCES
TEXT BOOKS :

1. Engineering Drawing, by N.D. Bhat V.M. Panchal, ,(48thEdition), Charotar publishers, 2005.

2. Engineering graphics with Auto CAD", by R.B. Choudary, Anuradha Publishers, 2002.

3. Engineering Drawing, b y Narayana and Kannaiah Scietech publishers, 2009.

REFERENCE BOOKS :

1. Engineering Drawing and Graphics, by Venugopal, New age publications, 2007.

2. Engineering Drawing, by Johle, Tata Macgraw Hill.2004.

3. Computer Aided Engineering Drawing, (3^{ed} edition), by Trymbaka Murthy, ,I.K.International publications.