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| **Course category** | : | Engineering Fundamentals (EF) |
| **Pre-requisite Subject** | : | NIL |
| **Contact hours/week** | : | Lecture : 0, Tutorial : 0 , Practical: 4 |
| **Number of Credits** | : | 2 |
| **Course Assessment methods** | : | Continuous assessment through tutorials, attendance, home assignments, quizzes, practical work, record, viva voce and Major Practical Examination |
| **Course Objectives** | : | This course aims at the following educational objectives: Comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views (principal, auxiliary, sections). Dimension and annotate two-dimensional engineering drawings. |

**Course Outcomes**: The students are expected to be able to demonstrate the following knowledge, skills and attitudes after completing this course

1. How Engineering Drawing helps to sketch the imagination?
2. Able to effectively practice the different scales for drawings.
3. Effectively analyze the geometrical shapes and to be able to draw.
4. Know about out solids and discuss about their classification.
5. How to implement the different views for a solid placed in 3dspace.
6. Construction of the object from different perspective.
7. Comparison and contrast between frustum and truncated solid.
8. Sketching of different sections for any 3D regular object.
9. Discussing the principles of Isometric Projection.
10. Sketching isometric projections for different geometrical shapes and solids.

**Topics Covered**

**UNIT-I**

**Conic Sections and Orthographic Projections Introduction**

Introduction to Engineering Drawing covering, Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections including the Rectangular Hyperbola (General method only); Cycloid, Epicycloid, Hypocycloid and Involute; Scales – Plain, Diagonal and Vernier Scales.

**Orthographic Projections:** Orthographic Projections covering Principles of Orthographic Projections- Conventions Projections of Pointsand lines inclined to both planes; Projections of planes inclined Planes - Auxiliary Plane

**UNIT-II**

**Projection of Regular Solids**

Projections of Regular Solids covering those inclined to both the Planes- Auxiliary Views

**UNIT-III**

**Sections and Sectional Views of Right Angular Solids**

Sections and Sectional Views of Right Angular Solids covering, Prism, Cylinder, Pyramid, Cone – AuxiliaryViews; Development of surfaces of Right Regular Solids - Prism, Pyramid, Cylinder and Cone

**UNIT-IV**

**Isometric Projections**

Isometric Projections covering, Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions. Overview of computer graphics, demonstrating knowledge of the theory of CAD software.

**Textbooks**

1. Engineering Drawing-Bhat, N.D.& M. Panchal, Charotar Publishing House, 2008

**Reference Books**

1. Engineering Drawing and Computer Graphics- Shah, M.B. & B.C. Rana, Pearson Education, 2008
2. A Text Book of Engineering Drawing-Dhawan, R.K., S. Chand Publications,2007
3. Text book on Engineering Drawing-Narayana, K.L. & P Kannaiah, Scitech Publishers, 2008