

Course Title: Engineering Drawing I

Course Code: EDRG 101

Credit Hours: 2

Course Description:

The course introduces students with basic engineering drawing skills.

Course Contents:

Unit 1: Introduction

Introduction to Engineering Drawing and Instruments used in Engineering Drawing: examples- Drafter, types of Pencil, Set Squares etc.; Layout of Drawing Sheets; Types of Lines; Lettering and Its Types; Layout and Lettering Practice

Unit 2: Dimensioning

Unit of dimensions, System of dimensioning, Shape Identification dimensioning

Unit 3: Engineering Scale

Representative Factor; Construction and types of Scales: Plain Scales, Diagonal Scales, Vernier Scales, Comparative Scales, and Scale of Chords

Unit 4: Geometrical Constructions:

To divide the lines into any number of equal parts; To divide a given Angle into Even number of Divisions; To draw an Arc Tangential to a Line and passing through a Point; Construction of Regular Polygons

Unit 5: Introduction of Engineering Curves

Terminology used in Engineering Curves and brief discussion about types and Applications of Engineering Curves; Definition and Terminology of Conic Section and Applications; Construction of Conic Sections

Unit 6: Ellipse

Definition, Terminology, and Applications; Finding out Foci when Major and Minor axis are given; Drawing Tangents to Ellipse at a Point on the Ellipse or from a Point outside the Ellipse, Different methods of construction of Ellipse: Pin and Thread Method, Intersecting Method, Rectangle Method, Circle Method, Trammel Method, Concentric Circle Method, Parallelogram Method, and Four Centers Approximate Method

Unit 7: Parabola

Definition, Terminology and applications; To find the Axis, Focus and Directrix of a Parabola; Drawing Tangents to the Parabola Either at a Point on the Parabola or from a point outside the Parabola when the Focus and Directrix are given and when the Focus and Directrix are not given; Different Methods of construction of Parabola: Rectangle Method, Parallelogram Method and Tangent Method.

Unit 8: Hyperbola

Definition, Terminology and Applications; Drawing Tangents to the Hyperbola either at a point on the Hyperbola or from the point outside the Hyperbola; Different methods of construction of Hyperbola; Definition and construction of Rectangular Hyperbola

Unit 9: Involute

Definition, Terminology, and applications; drawing Tangent and Normal at a point on Involute; Definition and Construction of Involute by Involute of a line, Involute of a Triangle, and Involute of a Polygon

Unit 10: Spirals

Definition, Terminology, and Applications; Definition and Construction of Archimedean and Logarithmic Spirals; Drawing Tangent and Normal at a Point on Spirals

Unit 11: Cycloidal Curves

Definition, Terminology, and Applications; Definition and Construction of Epicycloid and Hypocycloid; Drawing Tangent and Normal at a point on Cycloidal Curves; Definition, Terminology and Applications of Trochoid, Epitrochoid and Helix

Unit 12: Orthographic Projections

Projection of an object; Principal views and principal planes of Projection; Four quadrants and system of Projection; First angle and third angle Projection, Difference between them and their Advantages; Symbols of Projection; Projection of points; Projection of lines; Definition, true length and true inclination of a line, Line parallel to both the planes, Line parallel to one plane and perpendicular to other plane, Line parallel to one plane and inclined to other, Line inclined to both Horizontal and Vertical plane; Convention for line thickness

Unit 13: Projection of Plane Surfaces

Definition; True shape of a Plane Surface; Plane Surface parallel to one of the principal planes and perpendicular the other two; Plane Surfaces Perpendicular to one of the three principle planes and inclined to other two; Plane Surfaces inclined to all the three principal Planes of Projection

Unit 14: Projection of Plane Surfaces

Definition; True shape of a plane surface; Plane surface parallel to one of the principal planes and Perpendicular the other two; Plane surfaces Perpendicular to one of the three Principle planes and inclined to other two; Plane surfaces inclined to all the three Principal planes of Projection

Unit 15: Projection of Solids

Definition of solids; Classification of solids, e.g. Polyhedrons, Prisms, and Pyramids; Projection of solids Placed in Different Positions: Axis of the Solid Perpendicular to HP, Axis of the Solid Perpendicular to VP, Axis of the Solid Perpendicular to HP and parallel to VP, Axis of the solid inclined to VP and parallel to HP, and Axis of the Solid inclined to both HP and VP; Methods of solving the problems of Cubes, Cones, Prisms, Cylinders, and pyramids

Unit 16: Surface Development

Methods of development: Parallel line Development, Radial line Development, Triangulation Development, and Approximate Development

References

As prescribed by instructor