

**0944 -DIPLOMA IN INFORMATION TECHNOLOGY &  
ENGINEERING  
SEMESTER -I  
094416 - ENGINEERING DRAWING – I**

**RATIONALE**

Drawing is said to be the language of engineers and technicians. Reading and interpreting engineering drawing is their day-to-day responsibility. 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.

- Note:**
1. First angle projection is to be followed
  2. Minimum of 15 sheets to be prepared by each student
  3. SP 46 – 1988 should be followed
  4. Instruction relevant to various drawings may be given along with appropriate demonstration, before assigning drawing practice to the students

**DETAILED CONTENTS**

1. Drawing Office Practice
  - 1.1 Drawing instruments
  - 1.2 Sizes and layout of standard drawing sheets
  - 1.3 Sizes of drawing boards
  - 1.4 Drafting table/board
2. Different types of Lines and Free Hand Sketching (1 sheet)
  - 2.1 Different types of lines in engineering drawing as per BIS specifications
  - 2.2 Practice in free hand sketching of vertical, horizontal and inclined lines, geometrical figures such as triangles, rectangles, small and large circles, parabolas, curves and ellipses
3. Lettering Techniques and Practice (2 sheets)
  - 3.1 Instrumental single stroke (capital and inclined) lettering of 35 mm height in the ratios of 7:4
  - 3.2 Instrumental double stroke lettering of 35 mm height in the ratio of 7:4, vertical
  - 3.3 Free hand lettering (alphabet and numerals) lower case and upper case, single stroke vertical and inclined at 75 degree in different standard series of 2.5, 3, 5, 7, 10, and 15 mm heights in the ratio of 7:4
4. Dimensioning (1 sheet)
  - 4.1 Necessity of dimensioning, terms and notations – methods and principles, dimensioning small components as in 4.2 below (mainly theoretical instructions)
  - 4.2 Dimensioning of overall sizes, circles, thread holes, chamfered surfaces, angles, tapered surface holes equally spaced on PCD, counter sunk hole counter bored holes, cylindrical parts, narrow space and gaps, radii, curves and arches – chain and parallel dimensioning

5. Scale (3 sheets)

- 5.1 Scales – their need and importance, Definition of representative fraction (RF); Find RF of a given scale
- 5.2 Types of scales
- 5.3 Construction of plain and diagonal scales

6. Principle of Projections (strictly in first angle projection) (8 sheets)

- 6.1 Principle of orthographic projection
- 6.2 Projection of points situated in different quadrants
- 6.3 Projection of lines, Lines inclined to one plane and parallel to the other and vice versa
- 6.4 Projection of Planes: Planes perpendicular and parallel to either of the planes; planes perpendicular to one plane and parallel to the other or vice versa
- 6.5 Projection of solids, such as Prism, Cube, Cylinder and Cones with axis perpendicular to horizontal plane or parallel to horizontal plane/vertical plane or both
- 6.6 Drawing 3 orthographic views of given objects (at least five objects)
- 6.7 Drawing 6 views of given objects (non-symmetrical one or two objects may be selected for this exercise)
- 6.8 Identification of surfaces on drawn orthographic views from isometric object drawn
  
- 6.9 Exercises on missing lines, surfaces and views
- 6.10 Sketching practice of pictorial views from isometric objects

7. Sectional Views (2 sheets)

Need for sectional views – cutting planes methods of representing sections, conventional sections of various material, classification of sections, conventions in sectioning  
Drawing of full section, half section, partial broken out sections, off-set sections, revolved sections and removed sections. Exercises on sectional views of different isometric views  
Drawing of different conventions for materials in section, conventional breaks for shafts, pipes, rectangular, square, angle, channel, rolled sections

8. Isometric Views (2 sheets)

- 8.1 Fundamentals of isometric projections (theoretical instructions)
- 8.2 Isometric views from 2 or 3 given orthographic views

9. Introduction to Third angle projection (1 sheet)

**Note: Minimum 15 drawing sheets will be prepared by the students**

**RECOMMENDED BOOKS**

- 1. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House
- 2. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi
- 3. Engineering Drawing by PS Gill published by SK Kataria and sons, Delhi