



**COURSE TITLE : ENGINEERING GRAPHICS**  
**COURSE CODE : 2005**  
**COURSE CATEGORY : F**  
**PERIODS/ WEEK : 5**  
**PERIODS/ SEMESTER : 75**  
**CREDIT : 0**

**TIME SCHEDULE**

| MODULE       | TOPIC                                                                         | PERIODS   |
|--------------|-------------------------------------------------------------------------------|-----------|
| 1            | Introduction of engineering graphics<br>Lettering, numbering and dimensioning | 19        |
| 2            | Geometric construction & Scales                                               | 21        |
| 3            | Projections of points and lines                                               | 18        |
| 4            | Projections of planes                                                         | 17        |
| <b>TOTAL</b> |                                                                               | <b>75</b> |

**COURSE OUTCOME:**

**After the completion of the course, student will be able to**

- Understand the importance of engineering graphics
- Recognise the use of drawing instruments, standards, symbols etc.
- Appreciate the lettering, numbering , dimensioning
- Recognise geometric construction & Scales
- Understand the projections of points ,lines etc.
- Understand the projections of planes

**SPECIFIC OUTCOME:**

**MODULE - I**

**1.1.0 Understand the importance of engineering graphics**

- 1.1.1 Understand the importance of engineering graphics
- 1.1.2 Explain the importance of engineering communication medium
- 1.1.3 Describe the development of engineering graphics and computer aided drafting  
CAD
- 1.1.4 Indicate the link between engineering graphics and other subjects of study in  
diploma courses



### **1.2.0 Recognise the use of drawing instruments**

- 1.2.1 Use engineering drawing instruments
- 1.2.2 Select the proper instrument to draw horizontal, vertical and inclined lines
- 1.2.3 Select the proper instrument to draw large and small circles and arcs to its specifications
- 1.2.4 Select the proper pencil to draw different types of line according to its specifications
- 1.2.5 Identify the steps to keep the drawing clean and tidy

### **1.3.0 Recognise the use of drawing standards, symbols etc**

- 1.3.1 Appreciate the standards of engineering drawing
- 1.3.2 Select the drawing sheet
- 1.3.3 Draw different types of lines
- 1.3.4 Prepare title block as per BIS
- 1.3.5 Fold drawing sheets as per standards

### **1.4.0 Appreciate the lettering & numbering**

- 1.4.1 Apply lettering and numbering
- 1.4.2 Write drawing title using sloping and vertical lettering including numerals as per BIS
- 1.4.3 Select suitable size of letters of different layout and applications
- 1.4.4 Write engineering drawings notes using lettering

### **1.5.0 Appreciate the dimensioning**

- 1.5.1 Apply dimensioning as per standards
- 1.5.2 State the need of dimensioning as per BIS specification
- 1.5.3 Identify the notations used in a drawing as per BIS
- 1.5.4 Identify the system of placement of the dimensions as per BIS
- 1.5.5 Dimension of a given drawing according to BIS including features
- 1.5.6 Apply the rules for dimensioning of standard features, given a drawing comprising of standard features
- 1.5.7 Identify the principles of dimensioning, given a dimensioned drawing
- 1.5.8 Identify the correctness of an engineering drawing dimensioned and dimension the same as per BIS

## **MODULE - II**

### **2.1.0 Recognise Geometric construction**

- 2.1.1 Apply principles of geometrical construction
- 2.1.2 Construct polygon, given the length of the side
- 2.1.3 Insert a regular polygon in a circle.
- 2.1.4 Define Ellipse, involutes, helix, Parabola, Hyperbola and Cycloid,
- 2.1.5 Construct Ellipse by concentric circle, eccentricity, rectangular and parallelogram methods



- 2.1.6 Construct an involute, helix, parabola from given data
- 2.1.7 Identify the application of these constructions in engineering practice.

### **2.2.0 Recognise Scales**

- 2.2.1 Know about the importance of scale in Engineering Drawing
- 2.2.2 Identify different types of Scales

## **MODULE - III**

### **3.1.0 Understand the projections of points & lines**

- 3.1.1 Understand the projection of points, lines and planes
- 3.1.2 Project points in different quadrants
- 3.1.3 Project lines parallel to both planes
- 3.1.4 Project lines perpendicular to HP and || to VP
- 3.1.5 Project lines perpendicular to VP and || to HP
- 3.1.6 Project lines inclined to HP and || to VP
- 3.1.7 Project lines inclined to VP and || to HP
- 3.1.8 Project lines inclined to both planes - simple direct questions and answers
- 3.1.9 Find true length of lines

## **MODULE - IV**

### **4.1.0 Understand the projections of planes**

- 4.1.1 Project planes parallel to VP and perpendicular to HP
- 4.1.2 Project planes parallel to HP and perpendicular to VP
- 4.1.3 Project planes inclined to one plane and parallel to other

## **CONTENT DETAILS**

### **MODULE - I**

#### **1.1 The Importance of Engineering Graphics**

Explanation of the scope and objective of this subject – its importance as a graphic communication- Computer Aided Drafting (CAD) need for preparing drawing as per BIS standards.

#### **1.2 Drawing Instruments.**

Basic drawing instruments – T square – Set square – compass - dividers – drawing boards – Pencils – Drawing papers – Mini drafter – French curves – Stencils – Selection and mode of using them.



### **1.3 Drawing Standards**

Size of drawing sheets – Layouts of drawing sheet – Title Blocks – Types of lines – Folding of drawing sheets

### **1.4 Free hand Lettering and Numbering**

Need for legible lettering and numbering on drawings – selection of suitable size of lettering for different drawing writing of Engineering drawing titles and notes using both vertical and sloping styles.

### **1.5 Dimensioning**

Function of dimensioning - need for dimensioning engineering drawing according to BIS – notation used in dimensions – dimension line – extension line – arrow heads and leader – system of dimensioning (method I and method II)

## **MODULE - II**

### **2.1 Geometric construction**

Construction of regular polygon given the length of its side - methods of inserting a regular Polygon in a given circle – construction of ellipse by different methods – eccentricity - concentric circle- rectangular and parallelogram. Definition of involute - helix - parabola & hyperbola – construction of cycloid- helix- involute and parabola.

### **2.2 Scales**

Meaning of drawing to scale – reduced scale – enlarged scale – full size scale – types of scale – plain scales & diagonal scales – dividing a line into number of equal parts

## **MODULE - III**

### **3.1 Projection of points- lines and planes**

Projection of points in different quadrants-

Projection of straight lines(in first quadrant only) - parallel to one or both planes - parallel to one plane and perpendicular to other – inclined to one plane and parallel to other - inclined to both planes. Methods of finding true length and its inclination with the reference planes.



## **MODULE - IV**

### **4.1 Projection of planes**

Projection of planes (in first quadrant only) – perpendicular to both planes - parallel to one plane and perpendicular to other plane - inclined to one plane and perpendicular to the other plane

### **TEXT BOOKS**

- |                   |   |                      |                                |
|-------------------|---|----------------------|--------------------------------|
| 1. K. C Jon,      | - | Engineering Graphics | - PHI Learning Private Limited |
| 2. P. I. Varghese | - | Engineering Graphics | - VIP Publishers               |

### **REFERENCE BOOKS**

- |                           |   |                                                                   |
|---------------------------|---|-------------------------------------------------------------------|
| 1. N D Bhatt              | - | Engineering Drawing                                               |
| 2. Sageer& Abu            | - | Engineering Graphics                                              |
| 3 M. B. Shah and B.C.Rana | - | Engineering Drawing - Pearson Publications                        |
| 4. T.Jayapoovan           | - | Engineering Drawing & Graphics using Autocad – Vikas publications |