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 Lettering, numbering and dimensioning	19
2	Geometric construction & Scales	21
3	Projections of points and lines	18
4	Projections of planes	17
TOTAL		**75**

COURSE OUTCOME:

After the completion of the course, student will be able to
- o   Understand the importance of engineering graphics
- o   Recognise the use of drawing instruments, standards, symbols etc.
- o   Appreciate the lettering, numbering , dimensioning
- o   Recognise geometric construction & Scales
- o   Understand the projections of points ,lines etc.
- o   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 Identity 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