Course Name : All Branches of Diploma in Engineering and Technology.

Course Code : EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/ CE/CS/CR/ CO/CM/IF/EE/EP/CH/CT/PS/CD/ED/EI/CV/MH/FE/IU

Semester : First

Subject Title : Engineering Graphics

Subject Code :

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS.	TH	TEST	PR	OR	TW	TOTAL
02	--	04	--	--	--	50#	--	50@	100

* - 1 hr for Computer Aided Drafting

Notes: - 1) Students should use the A3 size sketchbook for class works.
2) Use approximately 570mm×380mm size drawing sheet for term work.

RATIONALE:

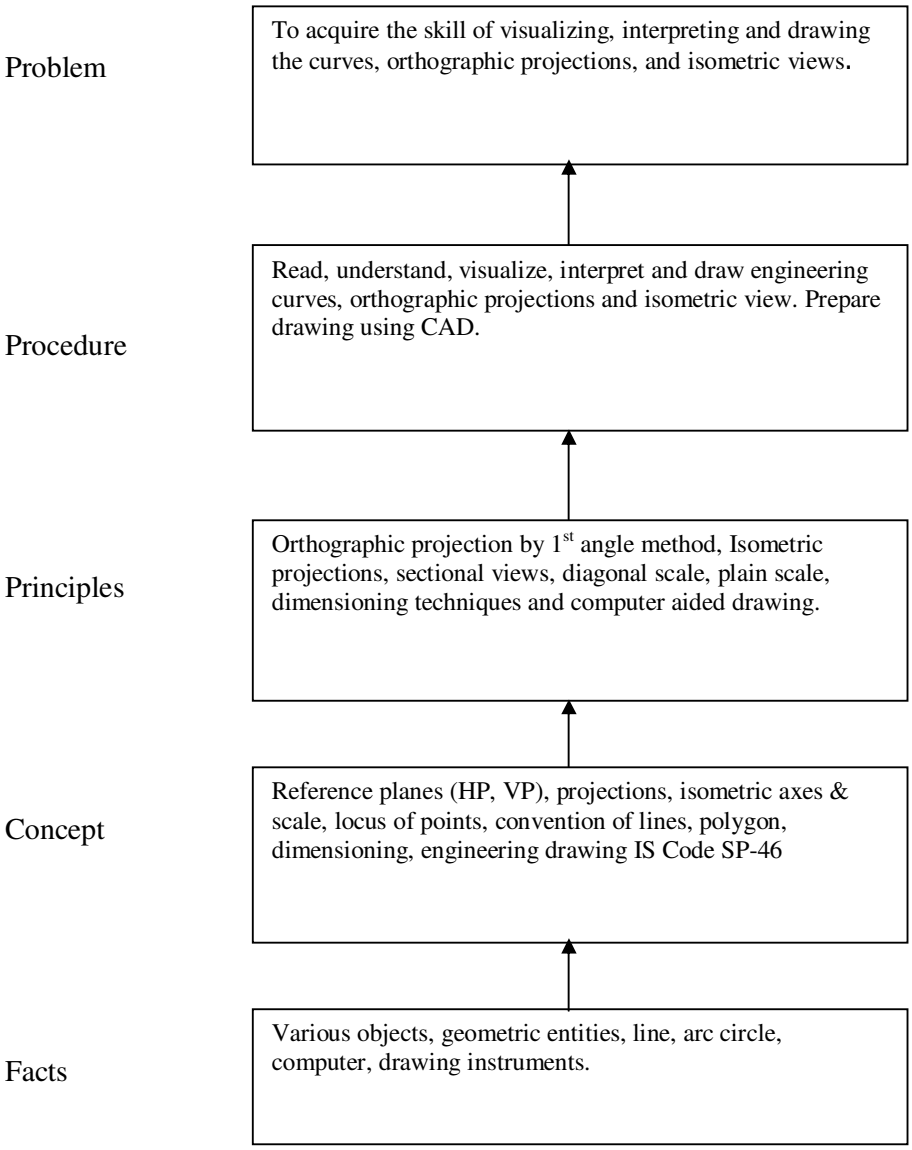
Engineering Graphics is the language of engineers. The concepts of Engineering Graphics are used to develop, express the ideas, and conveying the instructions which are used to carry out jobs in the field Engineering. The course illustrates the techniques of graphics in actual practice. This preliminary course aims at building a foundation for the further course in drawing and other allied subjects.

OBJECTIVES:

The student should be able to: -

1) Draw different engineering curves and know their applications.
2) Draw orthographic projections of different objects.
3) Visualize three dimensional objects and draw Isometric Projections.
4) Use the techniques and able to interpret the drawing in Engineering field.
5) Use computer aided drafting packages.

Learning Structure: -



Contents: Theory

Chapter	Name of Topic	Hours
1.	Drawing Instruments and their uses 1.1 Letters and numbers (single stroke vertical) 1.2 Convention of lines and their applications. 1.3 Scale (reduced, enlarged & full size) plain scale and diagonal scale. 1.4 Sheet layout. 1.5 Introduction to CAD (Basic draw and modify Command). 1.6 Geometrical constructions.	05
2.	Engineering curves & Loci of Points. 1.2 To draw an ellipse by 2.1.1 Directrix and focus method 2.1.2 Arcs of circle method. 2.1.3 Concentric circles method. 2.2 To draw a parabola by: 2.2.1 Directrix and focus method 2.2.2 Rectangle method 2.3 To draw a hyperbola by: 2.3.1 Directrix and focus method 2.3.2 passing through given points with reference to asymptotes 2.3.3 Transverse Axis and focus method. 2.4 To draw involutes of circle & polygon (up to hexagon) 2.5 To draw a cycloid, epicycloid, hypocycloid 2.6 To draw Helix & spiral. 2.7 Loci of Points: 2.7.1 Loci of points with given conditions and examples related to simple mechanisms.	09
3.	Orthographic projections 3.1 Introduction to Orthographic projections. 3.2 Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only) 3.3 Dimensioning technique as per SP-46	06
4.	Isometric projection 4.1 Isometric scale 4.2 Conversion of orthographic views into isometric View/projection(Simple objects) Projection of Straight Lines and Planes. (First Angle Projection Method only)	05

05	5.1 Lines inclined to one reference plane only and limited to both ends in one quadrant. 5.2 Projection of simple planes of circular, square, rectangular, rhombus, pentagonal, and hexagonal, inclined to one reference plane and perpendicular to the other.	07
	Total	**32**

PRACTICALS:

List of Practicals	**Skills to be developed**	
	Intellectual skills	**Motor Skills**
1.Introduction to graphics - (1 Sheet) Draw the following using CAD 1.1 Rectangle with given dimensions 1.2 Circle with given dimensions and hatch 1.3 Pentagon with line command 1.4 Hexagon with given dimensions 1.5 Draw one figure containing circle tangent, arc and dimensioning.	1.To develop ability to solve problems on geometrical constructions.	1.To develop ability to draw the geometrical constructions by computer.
2. Engineering curves & Loci of points - (1 Sheet) i) Three different curves are to be draw using any one method. ii) Draw locus of point on any one mechanism	1) To develop ability to differentiate between conic and curves. 2) To develop ability to identify the type of locus from the nature of surface and the position of generating circle. 3) Able to interpret the given mechanisms and locus of points.	1. To develop ability to draw different types of curves.
3. Orthographic projections - (Total 2 Sheets) Two objects by first angle projection method - (1 Sheet) Redraw the same sheet using CAD - (1 Sheet)	1) Develop ability to interpret first angle projection method. 2) To interpret and able to solve problem on orthographic projection of given object.	1. Develop ability to draw orthographic projections by first angle projection method
4. Isometric projection - (Total 2 sheets) Two objects one by true scale and another by isometric scale. (simple objects) - (1 sheet) Redraw the same sheet using CAD - (1 sheet)	1) Develop ability to differentiate between isometric view and isometric projections. 2) To differentiate between Isometric scale and true scale.	1. Develop ability to draw isometric views and isometric projections from given orthographic views of an object using computer.

5. Projections of line and planes. - (1 Sheet) Two problems on Projection of lines and two problems on Projection of Planes.	1) To develop ability to differentiate between true length and apparent length. 2) To interpret the position lines and plane with reference plane.	1) Able to draw Orthographic Projections of line and planes.

List of Practice Oriented Projects: -

1) To draw layout of visited Industry, College using CAD
2) To draw orthographic projection of given machine element using CAD

Learning Resources: -

A) Books: -

Sr. No	Author	Title	Publication
1	N. D. Bhatt	Engineering Drawing	Charotar Publishing House
2	K. Venugopal	Engineering Drawing and Graphics+ AutoCAD	New Age Publication
3	R. K. Dhawan	Engineering Drawing	S. Chand Co.
4	P. J. Shah	Engineering Drawing	---
5	K. R. Mohan	Engineering Graphics	Dhanpat Rai and Publication Co.

A) Video Cassettes / CD's

1. CD's prepared by MSBTE for Engineering Drawing

B) IS Code

SP – 46. Engineering Drawing practice for schools and colleges.