



SILVER OAK UNIVERSITY

Engineering and Technology (Diploma)

All Departments

Subject Name: ENGINEERING GRAPHICS

Semester: 1st Year

Prerequisite: Zeal to learn the Subject

Objective: To provide knowledge of drawing standards, reading & construction of technical drawings.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Evaluation Scheme				Total Marks
L	T	P		Internal		External		
				Th	Pr	Th	Pr	
2	0	4	4	40	50	60	--	150

Content:

Unit No.	Course Contents	Teaching Hours	Weightage %
1	ENGINEERING DRAWING AIDS Drawing equipments, instruments and materials, : Equipments-types, specifications, method to use them, applications. Instruments-types, Pencils-grades, applications, types of points and applications.	5	5
2	PLANNING, LAYOUT AND SCALLING OF DRAWING I.S. codes for planning and layout. Scaling technique used in drawing. Representative fraction. Types of scale: Plain scale, diagonal scale,	4	5
3	LINES, LETTERING AND DIMENSIONING Different types of lines. Vertical capital and lower case letters. Inclined capital and lower case letters. Numerals and Greek alphabets. Dimensioning methods. Aligned method, Unilateral with chain, parallel, and combined Dimensioning.	4	5
4	GEOMETRIC CONSTRUCTION Geometric construction related with line like Bisecting a line, to draw perpendicular with a given line, divide a line, etc. Geometric construction related with angle like Bisect an angle, trisect an angle, etc. To construct polygon. Triangle, Square Rectangle, Pentagon with special method, Hexagon with special method, To draw tangents, Geometric construction related with circle & arc.	5	5
	ENGINEERING CURVES Conic sections. Concept and understanding of focus, directrix, vertex and eccentricity and drawing of conic sections.	*	10

5	Using various methods, understand construction of : Ellipse, Parabola, Hyperbola, Cycloidal Curves (Cycloid, Epicycloid, Hypocycloid) Involutes: Involutes of a circle, Involutes of a polygon, Spiral (Archimedean spiral only).		
6	PROJECTION OF POINTS, LINES AND PLANES Reference planes, Projection of points. Projection of lines – determination of true length and inclinations for following cases: Line parallel to one or both the plane, Line perpendicular to one of the plane, Line inclined to one plane and parallel to another, Line inclined to both the planes. Projection of Planes: Types of planes, Projection of planes parallel to one of the reference planes, Projection of plane inclined to one reference plane and perpendicular to another, Projection of planes inclined to both reference planes. [Note: Triangle, Square / rectangle, pentagon, hexagon and circle shape should be included in various plane problems.]	10	30
7	ORTHOGRAPHIC PROJECTIONS Concept of quadrant: 1 st angle and 3 rd angle projection methods and symbols. Types of projections-orthographic, perspective, isometric and oblique: concept and applications. Various term associated with orthographic projections: Theory of projection, Methods of projection, Orthographic projection, Planes of projection. Conversion of simple pictorial views into Orthographic views. Illustrative problems on orthographic projection.	*	25
8	ISOMETRIC PROJECTIONS Isometric axis, lines and planes, Isometric scales, Isometric view and isometric drawing, Difference between isometric projection and isometric drawing, Illustrative problems limited to objects Containing lines, circles and arcs shape only.	*	15

***Note: Topic No. 5, 7, & 8 of the above syllabus are to be covered in practical Hours.**

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Draw orthographic projections of lines, planes and solids.	6,7
CO-2	Construct isometric scale, isometric projections and views.	2,3,8
CO-3	Draw sections of solids including cylinders, cones, prisms and pyramids.	4,5
CO-4	Draw projections of lines, planes, solids, isometric projections and sections of solids including cylinders, cones, prisms and pyramids using AutoCAD	8

Teaching & Learning Methodology:-

- Direct instruction
- Kinesthetic learning
- Flipped classroom
- Personalized learning

List of Experiments/Tutorials:

1. USE OF DRAWING INSTRUMENTS
2. GEOMETRIC CONSTRUCTION
3. ENGINEERING CURVES – I
4. ENGINEERING CURVES – II
5. PROJECTIONS OF POINTS AND LINES
6. PROJECTIONS OF PLANE
7. ORTHOGRAPHIC PROJECTIONS
8. ISOMETRIC DRAWINGS

Major Equipment:

- Models- full and cut.
- Set of various industrial drawings being used by industries-up dated.
- Drawing equipments and instruments for class room teaching-large size.
- Drawing board-half imperial size.
- T-square or drafter (Drafting Machine).
- Set squares (45° and 30°-60°)
- Protector.
- Drawing instrument box (containing set of compasses and dividers).
- Drawing sheets.
- Drawing pencils.
- Eraser.
- Drawing pins / clips.
- Roller scale

Books Recommended:-

Fundamentals of Engineering Drawing French & Vierck McGraw-Hill

Fundamentals of Drawing K.R.Gopalkrishna Subhash Publications, Bangalore.

Basic Engineering Drawing P.J.Shah S. V. Shah Atul Prakashan

Elements of Engineering Drawing N.D. Bhatt Charotar Publishing House,

Fundamentals of Engineering Drawing. W.J.Luzzadar Prentice-hall of India Pvt. Ltd.-New Delhi

List of Open Source Software/learning website:

- <https://nptel.ac.in/courses/112/103/112103019/>
- <https://nptel.ac.in/courses/112/104/112104172/>
- <https://nptel.ac.in/courses/112/105/112105294/>
- <http://web.iitd.ac.in/~hirani/me1110-part3.pdf>
- <https://silveroakuni.ac.in/video-lecture>
- <https://www.coursera.org/>
- <http://www.technologystudent.com/designpro/drawdex.htm>
- <http://www.studyvilla.com/ed.aspx>