

ENGINEERING GRAPHICS AND DESIGN LABORATORY

I Semester: CE ECE EEE II Semester: AE ME CSE IT								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AMEB02	Core	L	T	P	C	CIA	SEE	Total
		1	-	4	3	30	70	100
Contact Classes: 15	Tutorial Classes: Nil	Practical Classes: 60			Total Classes: 75			
<p>OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> I. Understand the basic principles of engineering drawing and construction of curves used in engineering field II. Apply the knowledge of interpretation of projection in different quadrants. III. Understand the projections of solids, when it is inclined to both planes simultaneously IV. Convert the pictorial views into orthographic view and vice versa. V. Create intricate details of components through sections and develop its surfaces. <p>COURSE LEARNING OUTCOMES (CLOs): The students should enable to:</p> <ol style="list-style-type: none"> 1. Understand the BIS conventions of engineering drawing with basic concepts, ideas and methodology 2. Principles of dimensions and their execution. Introduction to AutoCAD. 3. Apply the commands used in AutoCAD for different basic geometries 4. Visualize parabolic, Hyperbola and elliptical profiles in buildings and bridges 5. Visualize cycloidal and involutes profiles in developing new products like gears and other engineering applications. 6. Discuss the various types of scales for engineering application like maps, buildings, bridges. 7. Solve specific geometrical problems in plane geometry involving points and lines. 8. Understand the theory of projection in planes located in various quadrants and apply in manufacturing processes. 9. Understand the concept of projection of solids inclined to both the planes. 10. Understand the concept of projection of section of solids inclined to both the planes 11. Apply the terminology of development of surfaces in the area of chimneys and chutes. 12. Understand the orthographic projection concepts in solid modeling and apply the concepts in the areas of design. 13. Visualize the components by isometric projection by representing three dimensional objects in two dimensions in technical and engineering drawings. 								

LIST OF EXPERIMENTS	
Week-1	PARABOLA BY ALL METHODS
Draw the parabola by Eccentricity Method, Rectangle Method, and Parallelogram Methods.	
Week-2	ELLIPSE BY ALL METHODS
Draw the Ellipse by Eccentricity Method, Concentric circle method, Rectangle Method, and Parallelogram Methods.	
Week-3	HYPERBOLA BY ALL METHODS
Draw the Hyperbola by Eccentricity Method, and Rectangular Method.	
Week-4	CYCLOIDS AND INVOLUTES
Draw the Cycloid, Epi-Cycloid, Hypo-Cycloid, Involute for Circle, Polygons.	
Week-5	SCALES
Construct the Plain scale, Diagonal Scale, and Vernier scales.	
Week-6	POINTS AND LINES
Locate the projection of points in different coordinates. Draw the projection of the lines, parallel and perpendicular to planes, and inclined to planes.	
Week-7	PLANES
Draw the projection of the Planes, parallel and perpendicular to planes, and inclined to planes.	
Week-8	SOLIDS
Draw the projection of the Solids whose axis is, parallel and perpendicular to planes, and inclined to planes.	
Week-9	SECTION OF SOLIDS
Draw the projection of Section of Solids whose axis is, parallel and perpendicular to planes, and inclined to planes.	
Week-10	DEVELOPMENT OF SURFACES
Draw the lateral surface developments for cylinder, Prism, Pyramid, and cone.	
Week-11	TRANSFORMATIONS
Conversion of Isometric Projections to Orthographic Projection, and vice-versa.	
Week-12	ISOMETRIC VIEWS
Draw the Isometric views.	
Text Books:	
1. N. D. Bhatt, "Engineering Drawing", Charotar Publications, 49 th Edition, 2012.	
2. C. M. Agrawal, Basant Agrawal, "Engineering Drawing", Tata McGraw Hill, 2 nd Edition, 2013.	
Reference Books:	
1. K. Venugopal, "Engineering Drawing and Graphics", New Age Publications, 2 nd Edition, 2010.	
2. K. C. John, "Engineering Drawing", PHI Learning Private Limited", 2 nd Edition, 2009.	
3. Dhananjay. A. Jogle, "Engineering Drawing", Tata McGraw Hill, 1 st Edition, 2008.	