

**BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]****ES109: ENGINEERING GRAPHICS AND DESIGN  
CREDITS - 4 (LTP:2,0,2)****Course Objectives:**

To enable students to acquire and use engineering drawing skills as a means of accurately and clearly communicating ideas, information and instructions

**Teaching and Assessment Scheme:**

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	CE	ESE	CE		
2	0	4	4	30	20	40	60	100

**Course Contents:**

Unit No.	Topics	Teaching Hours
1	<b>Introduction to Engineering Graphics:</b> Drawing instruments and accessories, BIS – SP 46.	2 (Lab Hours)
2	Use of plane scales, Diagonal Scales.	2
3	<b>Orthographic Projections:</b> Fundamental of projection along with classification, Projections from the pictorial view of the object on the principal planes for view from front, top and sides using first angle projection method and third angle projection method, full sectional view	4
4	<b>Engineering Curves:</b> Classification and application of Engineering Curves, Construction of Conics, Cycloidal Curves, Involutives and Spirals along with normal and tangent to each curve	4
5	<b>Projections of Points and Lines:</b> Introduction to principal planes of projections, Projections of the points located in same quadrant and different quadrants, Projections of line with its inclination to one reference plane and with two reference planes. True length and inclination with the reference planes	4
6	<b>Projections of Planes:</b> Projections of planes (polygons, circle and ellipse) with its inclination to one reference plane and with two reference planes, Concept of auxiliary plane method for projections of the plane	4
7	<b>Projections of Solids, Section of Solids and Development of Surfaces:</b> Classification of solids. Projections of solids (Cylinder, Cone, Pyramid and Prism) along with frustum with its inclination to one reference plane and with two reference planes, Section of such solids and the true shape of the section, Development of surfaces	7

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Unit No.	Topics	Teaching Hours
8	<b>Isometric Projections and Isometric View or Drawing:</b> Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing of objects	3
9	<b>Computer Aided Drawing:</b> Design concepts, Introduction to AutoCAD, Basic commands for 2D drawing like: Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dimension style, etc. Industrial Drawing symbols, Program specific commands and tools.	6 (Lab Teaching)
<b>Total</b>		<b>28</b>

### List of References:

1. N.D.Bhatt, "*Engineering Drawing*", 53<sup>rd</sup> Edition, 2014, Charotar Publishing house Pvt. Ltd. Anand and Gujarat.
2. P.J.Shah, "*A Text Book of Engineering Graphics*" S.Chand & Company Ltd. New Delhi.
3. P.S.Gill, "*A Text Book of Engineering Drawing*, S.K.Kataria & Sons, Delhi.
4. B. Agrawal and C M Agrawal, "*Engineering Drawing*", Tata McGraw Hill, New Delhi.

### Course Outcomes (COs):

At the end of this course students will be able to ...

1. Use the drawing instruments effectively and dimension the given figure.
2. Interpret and correlate Orthographic and Isometric views of objects.
3. Construct engineering curves for various engineering applications.
4. Apply projection of lines, planes and solids in the context of design.
5. Explain the use of computer software meant for creating drawing.