

Course code: Course Title	Course Structure			Pre-Requisite
ME105:Computer Aided Engineering Graphics-II	L	T	P	NIL
	3	0	2	

**Course Objective:** The students will be prepared for the effective technical conversation and spatial visual expects of technical drawing. The students will be familiarized with drafting and engineering drawing practices with CAD for emerging digital era.

S. NO	Course Outcomes (CO)
CO1	Describe the principles and uses of Engineering Graphics. Also, students will learn rules of dimensioning, lettering, scales, types of projections, different planes used in projections. Students will be able to draw projections of point's lies in different quadrants. Also they will understand and obtain traces, true lengths shortest length and true angles with horizontal, vertical and auxiliary planes.
CO2	Draw projections of plane surfaces of different shapes. They will also draw the traces of plane surfaces.
CO3	Differentiate types of solids and projections and sections of solids which axis parallel, perpendicular and inclined to horizontal planes. Students will be able to learn application of development of surfaces and draw development of different types of surfaces.
CO4	Draw isometric projections and visualise orthographic projection of solids with different shapes.
CO5	Describe basic commands of 2D drawing with AutoCAD.
CO6	Transform the projections through AutoCAD.

S. NO	Contents	Contact Hours
UNIT 1	Introduction of Engineering Graphics and its significance, B.I.S. Specification, Dimensioning, Lettering, Different types of Projections, symbols used for lines and electrical engineering. Planes of projection, Reference and auxiliary planes, Projections of points and lines.	7
UNIT 2	Projection of polygonal surface and circular lamina located in first quadrant inclined to one or both reference planes. Classification of solids, Projection of solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.	7
UNIT 3	Sections of Solids: Right regular solids and Auxiliary views for the true shape of the sections such as Prism, Cylinder, Pyramid, and Cone. Development of surfaces for various regular solids such as Prism, Cylinder, Pyramid and Cone.	7

<b>UNIT 4</b>	Isometric Projection: Isometric scales, Isometric projections of simple and combination of solids. Sketching of Orthographic views from pictorial views and vice –versa, Sectional views.	7
<b>UNIT 5</b>	Introduction to AutoCAD: Basic commands for 2D drawing: Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dimension style, etc. Managing layers and object properties. Layout management, Plot setting, Create and manage dimension.	7
<b>UNIT 6</b>	Transformation of Projections: Conversion of Isometric Views to Orthographic Views and Vice-Versa in AutoCAD. Geometry and topology of engineered components: creation of engineering models and their presentation in standard 2D blueprint form.	7
	<b>TOTAL</b>	<b>42</b>

## REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Warren J. Luzadder," Fundamentals of Engg. Drg., Pren. Hall, N. Delhi.	1946
2	N.D. Bhatt, Elementary Engineering Drawing., Charotar Publition; 54th Edition 2023	2023
3	P.S. Gill," A Text Book of Geometrical Drawing., Katson Pub. Housing, Ludhiana. 2013th edition	2013
4	Jim Bethune and David Byrnes, Engineering Graphics with AUTOCAD 2023	2023
5	D. M. Kulkarni, A. P. Rastogi, A. K. Sarkar, Engineering Graphics with AutoCAD, PHI Learning Pvt. Ltd., 2009	2009

# **B. Tech. Biotechnology**