COURSE CONTENT

ENGINEERING DRAWING AND COMPUTER AIDED DRAFTING								
I Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
2510301	Foundation	2	0	2	3	40	60	100
Contact Classes: 50	Tutorial Classes: Nil	Practical Classes: 50				Total Classes: 50		
Prerequisites: There are no prerequisites for this course.								

Course Overview:

Engineering Drawing and Computer Aided Drafting is a fundamental subject that trains students in the visualization and representation of engineering objects using both conventional methods and modern CAD tools. It begins with geometrical constructions, scales, and engineering curves such as conic sections and cycloidal curves. Students then progress to orthographic projections of points, lines, planes, and solids, including auxiliary and sectional views. The subject also introduces development of surfaces and isometric projections, enabling conversion between 2D and 3D representations. Overall, it builds essential skills in technical drawing, spatial visualization, and CAD, preparing learners for advanced design applications.

Course Objectives:

1. To introduce the fundamentals of engineering drawing and projection systems.
2. To develop skills in constructing orthographic, isometric, and sectional views.
3. To train students in interpreting and creating technical drawings using CAD tools.
4. To familiarize students with dimensioning standards and drafting conventions.
5. To bridge manual drafting techniques with computer-aided drafting practices.

Course Outcomes: After Completion of the Course, Students should be able to

1. Understand and apply the principles of orthographic and isometric projections.
2. Create sectional views and dimensioned drawings using BIS standards.
3. Use CAD software to generate 2D engineering drawings.
4. Visualize and construct solid models from 2D views.
5. Interpret and produce engineering drawings of mechanical components and assemblies for practical and industrial applications.

UNIT-I: Introduction to Engineering Graphics (Conventional)

Principles of Engineering Graphics and their Significance, Geometrical Constructions, Scales, Plain and Diagonal, Conic Sections (Ellipse, Parabola and Hyperbola) General method only. Cycloid, Epicycloid and Hypocycloid.

UNIT-II: Orthographic Projections (Conventional and Computer Aided)

Principles of Orthographic Projections, Conventions, Projections of Points and Lines, Projections of Plane regular geometric figures. Auxiliary Planes. Computer aided orthographic projections, points, lines and planes. Introduction to Computer aided drafting, views, commands.

UNIT - III Projections of Regular Solids (Conventional and Computer Aided)

Auxiliary Views, Sections or Sectional views of Right Regular Solids, Prism, Cylinder, Pyramid, Cone, Auxiliary views, Computer aided projections of solids, sectional views.

UNIT - IV: **Development of Surfaces (Conventional)**

Prism, Cylinder, Pyramid and Cone.

UNIT - V: Isometric Projections (Conventional and Computer Aided)

Principles of Isometric Projection, Isometric Scale, Isometric Views, Conventions, Isometric Views of Lines, Plane Figures, Conversion of Isometric Views to Orthographic Views and Vice- versa, Conventions. Conversion of orthographic projection into isometric view.

TEXTBOOKS:

1. Engineering Drawing, N. D. Bhatt, Charotar, 54th Edition, 2023.
2. Engineering Drawing and graphics Using AutoCAD, T. Jeyapoovan and Vikas, S. Chand and company Ltd., 3rdEdition,2010.

REFERENCE BOOKS:

1. Engineering Drawing, Basant Agrawal and C.M. Agrawal, McGraw Hill, 3rd Edition, 2019.
2. Engineering Graphics and Design, WILEY, John Wiley and Sons Inc, 3rdEdition, 2020.
3. Engineering Drawing, M. B. Shah and B.C. Rane, Pearson, 2nd Edition, 2009.
4. Engineering Drawing, N. S. Parthasarathy and Vela Murali, Oxford, 1st Edition, 2015.
5. Computer Aided Engineering Drawing, K. Balaveera Reddy, CBS Publishers, 2nd Edition, 2015.

ELECTRONIC RESOURCES:

1. https://eg-dei.vlabs.ac.in/
2. https://eg-nitk.vlabs.ac.in/
3. https://www.autodesk.com/in/education/

MATERIALS ONLINE:

Lab Manual