

Engineering Graphics and Design [As per Choice Based Credit System (CBCS) scheme] SEMESTER - I/II			
Course Code	18EGDL15/18EGDL25	CIA Marks	40
Number of Lecture Hours/Week	4 (1L + 3P)	SEE Marks	60
Total Number of Lecture Hours	56	Exam Hours	03
CREDITS - 2.5			
Course Objectives:			
<ul style="list-style-type: none"> • To expose the students to standards and conventions followed in preparation of engineering drawings. • To make them understand the concepts of orthographic and isometric projections. • Develop the ability of conveying the engineering information through drawings. • To make them understand the relevance of engineering drawings to different engineering domains. • To expose them to Computer aided drafting packages and generation of computer assisted drawings. 			
Module-1			Teaching Hours
Introduction to Computer Aided Sketching Introduction, Drawing Instruments and their uses, BIS conventions, Lettering, Dimensioning and free hand practicing. Computer screen, layout of the software, standard tool bar/menus and description of most commonly used tool bars, navigational tools. Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing size and scale. Commands and creation of Lines, Co-ordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet, curves, constraints viz. tangency, parallelism, inclination and perpendicularity. Dimensioning, line conventions, material conventions and lettering.			04

Module-2	Teaching Hours
<p>Orthographic Projections of points, straight lines and planes. Introduction, Definitions - Planes of projection, reference line and conventions employed, Projections of points in all the four quadrants. Projections of straight lines (located in First quadrant/first angle only), True and apparent lengths, True and apparent inclinations to reference planes (No application problems and midpoint problems). Orthographic Projections of Plane Surfaces (First Angle Projection Only): Introduction, Definitions–projections of regular plane surfaces–triangle, square, rectangle, pentagon, hexagon and circle-in simple positions inclined to both the planes; planes in different positions by change of position method only. (No problems on punched plates and composite plates).</p>	12
Module-3	Teaching Hours
<p>Projections of solids Introduction, Definitions – Projections of right regular tetrahedron, hexahedron (cube), prisms, pyramids, and cones with axis inclined to both the planes. (No problems on octahedrons, and freely suspended solids).</p>	16
Module-4	Teaching Hours
<p>Development of Lateral Surfaces of Solids Introduction, introduction to section planes and sectional views, Development of lateral surfaces of right regular prisms, cylinders, pyramids, cones and their frustums resting with base on HP only. (No problems on lateral surfaces of trays, tetrahedrons, spheres and transition pieces).</p>	12
Module-5	Teaching Hours
<p>Isometric Projection (Using Isometric Scale Only) Introduction, Isometric scale, Isometric projection of simple plane figures, Isometric projection of hexahedron(cube), right regular prisms, pyramids, cylinders, cones, spheres. Isometric view of combination of two simple solids. Conversion of given isometric/ pictorial views to orthographic views of simple objects.</p>	12

Course outcomes: After studying this course, students will be able to:

- **Produce computer generated drawings using CAD software.**
- **Prepare drawings as per BIS following the conventions mentioned in the relevant codes.**
- **Apply the knowledge of orthographic projections to represent engineering information/concepts and preset the same in the form of drawings.**
- **Read and evaluate engineering drawings.**
- **Create isometric drawings of simple objects reading the orthographic projections of those objects.**

Question paper pattern:

- Module -1 is only for practice and Internal Assessment and not for examination.
- Question paper for each batch of students will be sent online by VTU and has to be downloaded before the commencement of Examination of each batch. The answer sheets will have to be jointly evaluated by the Internal & External examiners.
- A maximum of THREE questions will be set as per the following pattern (No mixing of questions from different Modules).

From Chapters	Marks Allotted
Module 2[Choice between (Points +Lines or Planes)]	25
Module 3	45
Module 4 or Module 5	30
Total	100

Scheme of evaluation:

Q.No.	Solutions and Sketching in the sketchbook	Computer Display and Printout	Total Marks
1	10	15	25
2	15	30	45
3	15	15	30
Total Marks	40	60	100

- Students have to submit the computer printouts and the sketches at the end of the examination. Both Internal & External examiners have to jointly evaluate the solutions (sketches) and computer display & printouts of each student for 100 marks (40 marks for solutions & sketches + 60 marks for computer display and printouts) and submit the marks list along with the solution (sketches) on graph sheets & computer printouts in separate covers.
- Each batch must consist of a minimum of 10 students and a maximum of 12 students.
- Examination can be conducted in parallel batches, if necessary.

Text Books:

- **Engineering Drawing** – N.D. Bhatt & V.M. Panchal, 48th edition, 2005-Charotar Publishing House, Gujarat.
- Engineering Graphics – K.R. Gopalakrishna, 32nd edition, 2005- Subash Publishers Bangalore.

Reference Books:

- Computer Aided Engineering Drawing – S. Trymbaka Murthy, – I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.
- Computer Aided Engineering Drawing- by Dr. M H Annaiah, Dr C N Chandrappa and Dr. B SudheerPremkumar, Fifth edition, New Age International Publishers.
- Fundamentals of Engineering Drawing with an Introduction to Interactive Computer Graphics for Design and Production- Luzadder Warren J., Duff John M., Eastern Economy Edition, 2005- Prentice-Hall of India Pvt. Ltd., New Delhi.
- A Primer on Computer Aided Engineering Drawing-2006, Published by VTU, Belgaum.