

Course code	ESC/2-T
Category	Engineering Science Courses
Practical Course title	Engineering Graphics & Design
Contact Hours	01
Credits	01
Course Assessment Methods	<p>Internal Examination (50 marks): Three minor tests each of 30 marks including third minor in open book mode will be conducted. The average of the highest marks obtained by a student in the any of the two minor examinations will be considered. Class Performance will be measured through percentage of lectures attended (12 marks). Assignments, quiz etc. will have weightage of 08 marks.</p>

About the Course:

The objective of this course is to develop graphic skills for the preparation of two dimensional and three-dimensional drawings of objects manually. The course is also intended to develop skills for reading, understanding and interpretation of engineering drawings.

S. No.	Course Outcomes	RBT Level
CO-1	Student should be able to learn about different drawing instruments, types of lines & dimensioning system. First angle & Third angle projections	(LOTS: Levels 1: remember)
CO-2	Students will be able to draw Orthographic Projections, understand the Isometric Projections able to draw pictorial views.	(LOTS: Levels 3: Apply)
CO-3	Students will be able to draw Projections of points, Projections of lines, and visualize the various positions of Straight line in vertical & horizontal planes.	(LOTS: Levels 3: Apply)
CO-4	Students will be able to understand the Projections of Planes. Students will be able to draw solids and visualize three dimensional objects like pentagon, hexagon & others shaped objects. Hence enabling them to design new products.	(LOTS: Levels 3: Apply)
CO-5	Students will be able to understand and draw the Projections of polyhedral solids and visualize these in simple positions with axis perpendicular to a plane, axis parallel to both planes & other positions.	(LOTS: Levels 3: Apply)
CO-6	Students should be able to draw various three dimensional objects for various machines and industrial objects to understand the geometry and interiors of that object.	(LOTS: Levels 3: Apply)

Course contents:

UNIT-I

Introduction to Engineering Drawing

Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Scales. Definitions - Planes of projection, reference line and conventions employed. First angle and Third angle projection.

Orthographic and Isometric Projections

Various types of projections, First and Third angle systems of orthographic projections. Introduction to Isometric Projections.

UNIT-II

Projections of Points

Projections of points in different quadrants

Projections of straight lines

Parallel to one or both reference planes, contained by one or both planes, Perpendicular to one of the planes, inclined to one plane but parallel to the other plane, inclined to both the planes, true length of a line and its inclinations with reference planes.

UNIT – III

Projections of Planes

Orthographic projections of plane surfaces: projection of regular plane surfaces – Triangle, square, rectangle, pentagon, hexagon and circle parallel to one reference plane, inclined to one plane but perpendicular to other, inclined to both reference planes.

UNIT – IV

Projections of Solids

Projections of Polyhedra Solids and solids of Revolution – in simple positions with axis perpendicular to a plane, with axis parallel to both planes, with axis parallel to one plane and inclined to the other. Development of surface of various simple solids such as cubes, cylinders, prisms, pyramids etc.

Suggested Text/Reference Books:

1. Bhatt N.D., Panchal V.M.& Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House
2. Gill P.S., (2018), Engineering Graphics & Design, S.K. Kataria & Sons
3. Shah, M. B.& Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
4. Agrawal B.& Agrawal C. M. (2012), Engineering Graphics, TMH Publication

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1.	2	-	-	-	-	-	-	-	-	-	-	2
CO2.	2	3	-	-	-	-	-	-	-	-	-	3
CO3.	2	3	-	-	-	-	-	-	-	3	-	3
CO4.	2	3	-	-	-	-	-	-	-	3	-	3
CO5.	2	3	3	2	2	-	-	-	-	3	-	3
CO6.	2	3	-	-	-	-	-	-	-	3	-	3
3 –High 2-Medium 1-Low												