# Faculty of Engineering and Technology

Bachelor of Technology (Semester I / First year)
In Effect from Academic Year 2023-24

| | |
|---|---|
| **Branch Name:** | Computer Engineering / Information Technology / Artificial Intelligence and Data Science / Information and Communication Technology / Mechanical Engineering / Civil Engineering/ Electrical Engineering / Artificial Intelligence and Machine Learning / Electronics and Communication Engineering |
| **Program Code:** | ET103 / ET105 / ET108 / ET107 / ET101 / ET106 / ET109 / ET114 / ET116 |
| **Course Title:** | Engineering Graphics and Design |
| **Course Code:** | 2ET1000108T |
| **Pre-requisite Course:** | Zeal to learn the subject |

**Course Objectives:**

CO1. Understand the importance and principles of engineering drawing by hand practice

CO2. Understand the isometric and orthographic projections of different objects.

**Teaching and Examination Scheme:**

| Credit | Teaching Scheme Hours per week | | | | Evaluation Scheme (Marks) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Theory (Marks) | | | | Practical (Marks) | | | | Total (Marks) |
| | | | | | SEE | | CCA | | SEE | | CCA | | |
| | L | T | P | Total | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | |
| 3 | 3 | - | - | 3 | 24 | 60 | 16 | 40 | - | - | - | - | 100 |

**Course Contents:**

| Unit No | Topic | Total Hours | Weightage (%) |
|---|---|---|---|
| 1 | **Introduction to Engineering Graphics:** Drawing instruments and accessories, BIS – SP 46. Use of plane scales, Diagonal Scales and Representative Fraction. | 03 | 15 |
| 2 | **Loci of Points:** Path of the points moving on Simple mechanisms, Slider crank mechanism, Four bar mechanism. | 05 | |
| 3 | **Engineering Curves:** Classification and application of Engineering Curves, Construction of Conics, Cycloidal Curves, Involutes and Spirals along with normal and tangent to each curve. | 05 | 10 |
| 4 | **Projections of Points and Lines:** Introduction to principal planes of projections, Projections of the points located in the 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. | 08 | 20 |
| 5 | **Projections of Planes:** 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. | 05 | 20 |
| 6 | **Projections of Solids, Section of Solids:** 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. | 06 | |
| 7 | **Orthographic Projections:** 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. | 06 | 30 |
| 8 | **Isometric Projections and Isometric View or Drawing:** Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing of simple objects. | 06 | |
| 9 | **Computer Aided Drawing:** | 04 | 05 |

| | | | |
|---|---|---|---|
| | Introduction to Computer Aided Drawing, Basic commands for 2D drawing like : Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dim style, etc. | | |

**Reference Books:**


1. A Text Book of Engineering Graphics by P. J. Shah S.Chand & Company Ltd., New Delhi
2. Elementary Engineering Drawing by N. D. Bhatt Charotar Publishing House, Anand
3. A text book of Engineering Drawing by R. K. Dhawan, S.Chand & Company Ltd., New Delhi
4. A text book of Engineering Drawing by P. S. Gill, S. K. Kataria & sons, Delhi
5. Engineering Drawing by B. Agrawal and C M Agrawal, Tata McGraw Hill, New Delhi.


**Course Learning Outcomes (CLO):**

| CLO | Description | Bloom's Taxonomy Level |
|---|---|---|
| CLO1 | To know and understand the conventions and the methods of engineering drawing. | 2 Understanding |
| CLO2 | To improve their technical communication skill in the form of communicative drawings. | 1 Remembering |
| CLO3 | Interpret engineering drawings using fundamental technical mathematics. | 3 Applying<br>4 Analyze |
| CLO4 | Construct basic and intermediate geometry. | 2 Understanding<br>6 Creating |
| CLO5 | To improve their visualization skills so that they can apply these skills in developing new products. | 5 Evaluating |
| CLO6 | Comprehend the theory of projection. | 2 Understanding |

**Mapping of CLO with PO and PSO**

| Course Learning Outcomes | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CLO1 | M | M | L | | | M | L | | | | L | | | |
| CLO2 | | | M | H | L | L | | | | | | | L | |
| CLO3 | | L | | | H | | | L | M | | | | M | |
| CLO4 | | L | M | | M | | | L | M | M | | | M | |
| CLO5 | | M | | M | L | | L | | | | | | | M |
| CLO6 | | | | | | | | M | | M | L | L | | L |

**H: High, M: Medium, L: Low**