FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: **Bachelor of Technology (Electrical Engineering)**

Semester: **II**

Course Code: **202001208**

Course Title: **Engineering Graphics**

Course Group: **Engineering Science Course**

Course Objectives: The course is intended to make students familiar with the concepts of Engineering Drawing, widely used in the industries and facilitate them in enhancing their technical communication skills using Engineering Drawing. To improve visualization skills of students which they can use in the industries for developing products.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
2	0	4	4	50 / 18	50 / 17	25 / 9	25 / 9	150 / 53

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction to Engineering Graphics: Drawing instruments and accessories, BIS – SP 46, Geometrical Constructions, Dimensioning, Construction of plain scales and Diagonal Scales	3 (Lab)
2	Engineering Curves: Classification and application of Engineering Curves; Construction of Conics, Cycloidal Curves, Involutes and Spirals along with normal and tangent to each curve	6 (Lab)
3	Introduction of projections: Different types of Projections, Introduction to principal planes of projections Projections of Points and Lines: Projection of points located in different quadrants. Projection of line with its inclination to one reference plane and with two reference planes (excluding mixed quadrants and traces). True length and its inclination with the reference planes. Application of projection of lines.	9
4	Projections of Planes: Projections of planes (polygons, circle and ellipse) with its inclination to one reference plane and with two reference planes (oblique planes)	4

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5	Projections of Solids: Classification of solids. Projections of solids (Cylinder, Cone, Pyramid, cube and Prism) with its inclination to one reference plane and with two reference planes	**6**
6	Section of Solids and Development of Surfaces: Section of such solids and the true shape of the section, Development of surfaces	**4**
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	**3+2 (Lab)**
8	Computer Aided Drawing: Introduction to AutoCAD, Basic commands for 2D drawing like: Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dim style	**2 (Lab)**

List of Practicals / Tutorials:

1	Practice sheet (which includes geometric constructions, dimensioning methods, different types of line)
2	Scales and Conic Sections
3	Engineering Curves (Cycloids, Involutes & Spirals)
4	Projection of Lines
5	Projection of Planes
6	Projection of Solids
7	Section of Solids and Development of surfaces
8	Orthographic Projection
9	Auto CAD Drawing

Reference Books:

1	Elementary Engineering Drawing by N.D.Bhatt Charotar Publishing House, Anand
2	A Text Book of Engineering Graphics by P.J.Shah S.Chand & Company Ltd., New Delhi
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
6	Engineering Graphics & Design by Arunoday Kumar, Tech-Max Publication, Pune

Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods

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Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
20%	25%	25%	10%	10%	10%	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Know about the basics of drawing including use of standards; dimensioning types and methods for technical drawings and have basic insight about the use of Auto CAD for engineering drawing	**10**
CO-2	Have idea about the need for scales along with construction of various engineering curves and their applications.	**20**
CO-3	Understand the concept of different types of projection methods and orthographic projection in more details and learn to find the material requirement for the manufacturing industry using the concept of development of surfaces.	**30**
CO-4	Learn to visualize multiple types of objects in different positions and also to draw sectional views.	**40**

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	--
Next Review on (Month-Year):	June-2025

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