

Syllabus for Bachelor of Technology

Mechanical Engineering

Subject Code: 01ME0102

Subject Name: Engineering Graphics

B.Tech. Sem -II

Objective: Engineering Drawing is an effective language of engineers. It is the foundation block which strengthens the engineering & technological structure. Moreover, it is the transmitting link between ideas and realization.

Credits Earned: 6 Credits

Pre-requisite of course: Zeal to learn the subject.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA	CSE	Viva (V)	Term work (TW)	
4	0	4	6	50	30	20	25	25	150

Contents:

Unit	Topics	Hours
1	Introduction to Engineering Graphics: Drawing instruments and accessories, BIS – SP 46. Use of plane scales, Diagonal Scales and Representative Fraction	4
2	Engineering Curves: Classification and application of Engineering Curves, Construction of Conics, Cycloidal Curves, Involute and Spirals along with normal and tangent to each curve	6
3	Projections of Points and Lines: Introduction to principal planes of projections, Projections of the points located in 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	6

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4	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	6
5	Projections of Solids and 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	6
6	Orthographic Projections: (To be cover in Laboratory) 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	10
7	Isometric Projections and Isometric View or Drawing: (To be cover in Laboratory) Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing	10
8	Civil Engineering Drawing: Drawing instruments used in civil engineering drawings & their uses, Different types of lines & its uses in civil engineering drawings, types of dimensions. Demonstration for types of drawing viz working plan, submission plan, key plan, maps, drainage plan, elevations & sections. Symbols used in Civil Drawings, Details of building components like foundation, plinth, lintel, wall, floor, slab etc. Preparation of wall plan, elevations and sections from line plan.	10
	Total Hours	38

References Book:

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

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Course Outcomes: After completion of this course, student will be able to

1. To know and understand the conventions and the methods of engineering drawing.
2. Interpret engineering drawings using fundamental technical mathematics.
3. Construct basic and intermediate geometry.
4. To improve their visualization skills so that they can apply these skills in developing new products.
5. To improve their technical communication skill in the form of communicative drawings.
6. Comprehend the theory of projection

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
14%	22%	22%	14%	14%	14%

Suggested List of Experiments:

Students are required to prepare drawing sheets on the following topics.

Minimum three problems must be given for sheet number 3 to 8.

1. Practice sheet (which includes dimensioning methods, different types of line, construction of different polygon, divide the line and angle in parts, use of stencil,)
2. Plane scale and diagonal scale
3. Engineering curves
4. Projection of line and Projection of plane (minimum two problems on each)
5. Projection and section of solid
6. Orthographic projection
7. Isometric projection

Instructional Method:

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- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses