

BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]

2ME05: MACHINE DRAWING

CREDITS - 2 (LTP:0,0,2)

Course Objective:

1. To illustrate Indian Standards on drawing practices and standard components.
2. To practice 2D drafting and 3D modeling software systems.

Teaching and Assessment Scheme:

| Teaching Scheme (Hours per week) | | | Credits | Assessment Scheme | | | | |
|-------------------------------------|---|---|---------|-------------------|--------|-----|-----------|-----|
| L | T | P | | C | Theory | | Practical | |
| | | | ESE | | CE | ESE | CE | |
| 0 | 0 | 4 | 2 | 00 | 00 | 40 | 60 | 100 |

Course Contents:

| Unit No. | Topics | Teaching Hours |
|-------------|--|-------------------|
| 1 | Drawing Standards & Fits And Tolerances: Code of practice for Engineering Drawing, IS/ISO specifications-Welding symbols, riveted joints, keys, fasteners, GA Drawings. Limits, Fits and Tolerances: Introduction, Basic definitions, Maximum Metal Condition, Least Metal Condition, Linear and angular tolerances, Tolerance grades, Fundamental deviations, Types of fits and its basis, Types of gauges. Introduction to Geometrical Dimensioning and Tolerances: Basic terminology of GD&T, Different tolerance characteristics, symbols and tolerance modifiers, Different aspects of datum, Parameters of surface texture and qualifications, Roughness and Machining symbols indication on drawings, Surface Lay Indication. | 08 |
| 2 | Introduction to 2D Drawing: Preparation of production drawings and reading of part and assembly drawings of followings: Bearings: Bush bearing, Plummer block Valves: Safety and non-return valves | 12 |
| 3 | 3D Geometric Modeling and Assembly: Sketcher, Datum planes, Part modeling: Extrusion, Revolve, Sweep and Blend, Engineering Features: Holes, Ribs, Round, Chamfer, Draft and Shell, Editing Features: Pattern and Mirror, Assembly Modeling: Bottom-Up Approach, Parametric Modelling. | 18 |

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| Unit No. | Topics | Teaching Hours |
|--------------|---|----------------|
| 4 | Part Production Drawings and Assembly Drawings: Couplings: Flange, Universal, Oldham, Muff and Gear couplings. Joints: Knuckle, Gib & cotter, Sleeve & cotter, Strap, Spline Joint, Bolt Joint etc, Combination of Joints. Engine parts: Piston, Connecting rod, Fuel injector, Cross-head (vertical and horizontal), Stuffing box, Multi-plate clutch. Miscellaneous machine components: Screw jack, Machine vice, Tail stock, Three jaw chuck, Single tool post, Revolving Center, Vane and Gear pump. | 18 |
| Total | | 56 |

List of References:

1. N.D. Bhatt and V M Panchal, “*Machine Drawing*”, Charotar Publishers
2. Sadhu Singh, P. L. Shah, “*Fundamentals Of Machine Drawing*”, 2nd Edition, PHI Learning Pvt. Ltd., 2012
3. Prof. Sham Tickoo, “*Creo Parametric 5.0 for Designers*”, 5th Edition, CAD/CIM Technologies, USA
4. K. L. Narayana, P. Kanniah, “*Machine Drawing*”, 3rd edition, New age international (P) Ltd.

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Understand the drawing standards, Fits and Tolerances.
2. Prepare production drawings and assembly drawings.
3. Prepare 3D part models using CAD Software.
4. Prepare Assembly drawings using CAD Software.