

## MACHINE DRAWING THROUGH CAD LABORATORY

| <b>III Semester: ME</b>  |          |                              |   |                              |         |               |                          |       |
|--|----------|------------------------------|---|------------------------------|---------|---------------|--------------------------|-------|
| Course Code  | Category | Hours / Week                 |   |                              | Credits | Maximum Marks |                          |       |
| AMEC08   | Core     | L                            | T | P                            | C       | CIA           | SEE                      | Total |
|  |          | 1                            | 0 | 2                            | 1       | 30            | 70                       | 100   |
| <b>Contact Classes: 12</b>   |          | <b>Tutorial Classes: Nil</b> |   | <b>Practical Classes: 24</b> |         |               | <b>Total Classes: 36</b> |       |
| <b>Prerequisite: There are no prerequisites to take this course.</b>   |          |                              |   |                              |         |               |                          |       |
| <p><b>I. COURSE OVERVIEW:</b><br/> Machine drawing is used to communicate the necessary technical information required for manufacture and assembly of machine components. These drawings follow rules laid down in national and International Organizations for Standards (ISO). Hence the knowledge of the different standards is very essential. Students have to be familiar with industrial drafting practices and thorough understanding of production drawings to make themselves fit in industries.</p> <p><b>II. COURSE OBJECTIVES:</b><br/> <b>The students will try to learn:</b></p> <p><b>I.</b> Understand Code of drawing practice as per BIS conventions for mechanical elements using AutoCAD<br/> <b>II.</b> Practice the drawing methods for sectioning of joints, couplings, bearings, keys<br/> <b>III.</b> Prepare assembly drawings, sectional views and bill of materials for selected assemblies.</p> <p><b>III. COURSE SYLLABUS:</b></p> <p><b>Week-1: CONVENTIONAL REPRESENTATION</b><br/> Batch I &amp; Batch II:<br/> Drawing of Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs and ribs; Introduction to AutoCAD</p> <p><b>Week-2: SECTIONAL VIEWS</b><br/> Batch I &amp; II:<br/> Types of sections, selection of section planes and drawing of sections and auxiliary sectional views, parts not usually sectioned</p> <p><b>Week-3: DIMENSIONING</b><br/> Batch I &amp; II:<br/> Methods of dimensioning, general rules for sizes, and placement of dimensions for holes, enters, and curved and tapered features</p> <p><b>Week-4: MACHINE ELEMENTS</b><br/> Batch I &amp; Batch II :<br/> Drawing of machine elements and simple parts; Selection of orthogonal views and additional views for the following machine elements and parts with drawing proportion, popular forms of screw threads, bolts, nuts and stud bolts.</p> <p><b>Week-5: KEYS AND COTTER JOINTS</b><br/> Batch I &amp; Batch II:<br/> Keys, cotter joints, and knuckle joint.</p> <p><b>Week-6: RIVETED JOINTS</b><br/> Batch I &amp; Batch II:<br/> Riveted joints for plates.</p> |          |                              |   |                              |         |               |                          |       |

**Week-7: COUPLINGS**

Batch I & Batch II:

Shaft couplings and spigot joint.

**Week-8: BEARINGS**

Batch I & Batch II:

Drawing of Journal Bearing pivot, and collar bearing.

**Week-9: ASSEMBLY DRAWINGS-I**

Batch I & Batch II:

Assembly drawings for the Engine parts–stuffing box, Eccentrics, I.C. engine connecting rod.

**Week-10: ASSEMBLY DRAWINGS-II**

Batch I & Batch II:

Assembly drawings for the Screw jack

**Week-11: ASSEMBLY DRAWINGS-III**

Batch I & Batch II:

Assembly drawings for the Machine vice and tailstock

**Week-12: ASSEMBLY DRAWINGS-IV**

Batch I & Batch II: Assembly drawings for the Rams-bottom Safety Valve

**IV. REFERENCE BOOKS:**

1. K.L. Narayana, P. Kannaiah, K. Venkata Reddy, “Machine Drawing”, New Age Publishers, 3<sup>rd</sup> Edition, 2012
2. K.C. John, “Text book of Machine Drawing”, PHI Eastern Economy, 1<sup>st</sup> Edition, 2010.
3. P.S Gill, “Machine Drawing”, S.K Kataria & Sons, 1<sup>st</sup> Edition, 2013
4. N. D. Bhatt, V. M Pancahal, “Machine Drawing”, Charotar, 1<sup>st</sup> Edition, 2014.

**V. WEB REFERENCES:**

<http://www.iare.ac.in>