<table>
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<th>Course No.</th>
<th>Course Name</th>
<th>L-T-P-Credits</th>
<th>Year of Introduction</th>
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<tr>
<td>ME231</td>
<td>COMPUTER AIDED MACHINE DRAWING LAB</td>
<td>0-0-3-1</td>
<td>2016</td>
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**Course Objectives:**
1. To introduce students to the basics and standards of engineering drawing related to machines and components.
2. To teach students technical skills regarding assembly, production, and part drawings.
3. To familiarize students with various limits, fits, and tolerances.
4. To help students gain knowledge about standard CAD packages on modeling and drafting.

**Syllabus**
Introduction to Machine Drawing, Drawing Standards, Fits, Tolerances, Production drawings. Introduction to CAD, assembly drawings, etc.

**Expected outcome**
At the end of the course students will be able to
1. Acquire the knowledge of various standards and specifications about standard machine components.
2. Make drawings of assemblies with the help of part drawings given.
3. Ability to select, configure and synthesize mechanical components into assemblies.
4. Apply the knowledge of fits and tolerances for various applications.
5. Able to model components of their choice using CAD software.
6. Get exposure to advanced CAD packages.

**Text Books:**
# Course Plan

<table>
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<tr>
<th>Module</th>
<th>Contents</th>
<th>Hours</th>
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| 0      | Introduction  
Principles of drawing, free hand sketching, manual drawing, CAD drawing etc. | 01 |
| I      | Drawing standards: 2 exercises  
Code of practice for Engineering Drawing, BIS specifications – lines, types of lines, dimensioning, sectional views, welding symbols, riveted joints, keys, fasteners –bolts, nuts, screws, keys etc. | 05 |
| II     | Fits ,Tolerances and Surface Roughness: 2 exercises  
Limits, Fits – Tolerances of individual dimensions – Specification of Fits – basic principles of geometric & dimensional tolerances. Preparation of production drawings and reading of part and assembly drawings, surface roughness, indication of surface roughness, etc. | 06 |
| III    | Introduction to drafting package:  
Introduction, input, output devices, introduction to drafting software like Auto CAD, basic commands and development of simple 2D and 3D drawings. Drawing, Editing, Dimensioning, Plotting Commands, Layering Concepts, Matching, Detailing, Detailed drawings. | 06 |
| IV     | Assembly drawings(2D); 10 exercises  
Preparation of Bill of materials and tolerance data sheet. | 24 |

**FIRST INTERNAL EXAM**

**SECOND INTERNAL EXAM**

*Note:* 50% of assembly drawings (Module IV) must be done manually and remaining 50% of assembly drawings must be done using any 2D drafting package.

**FINAL INTERNAL EXAM**

**Examination scheme**

1. End semester examination shall be for 30 marks and of 2 hours duration.
2. End semester exam shall be based on Module IV. It shall be conducted as a CAD examination.
3. 50 marks are allotted for internal evaluation: first internal exam 25 marks, second internal exam 25 marks and class exercises 20 marks.
4. The first internal exam will be based on modules I and II and the second internal exam will be based on Module IV alone. (Both will be conducted as manual drawing examinations)