

**MECHANICAL ENGINEERING PROGRAM**  
**ABET COURSE SYLLABUS**

**ME 130 Introduction to Mechanical Engineering III (1) Required**

<b>Course Description:</b> (2019-20 Catalog)	Use of computer-aided design to communicate parts and assemblies. Dimensioned drawings for part fabrication. Introduction to fits and tolerances. Layout drawings and functional assemblies. 1 Laboratory.
<b>Prerequisite Courses:</b>	ME 129; IME 146 Concurrent
<b>Prerequisites by Topic:</b>	Orthographic Drawings Sectional Views Auxiliary Views Pictorial Views Descriptive Geometry
<b>Textbook:</b> (and/or other required material)	<u>Technical Graphics Communication</u> , 4th Edition, Bertoline Engineering Drafting Toolkit SolidProfessor Online Educational Software
<b>References:</b>	Any specified by Instructor
<b>Course Coordinator/Instructor:</b>	John Larson, ME Lecturer
<b>Course Learning Outcomes:</b>	<ol style="list-style-type: none"><li>1. Ability to construct engineering communication documents describing mechanical devices and systems by using points, vectors and surfaces.</li><li>2. Selection of appropriate orthographic, sectional, auxiliary and pictorial views to convey engineering design concepts to fabricators.</li><li>3. Construct appropriate dimensions and geometric tolerances to convey a part's functional design requirements to fabricators.</li><li>4. Calculate size tolerances necessary to ensure the functional relationship of multi-part assemblies.</li><li>5. Ability to create and define a conceptual solution to an engineering problem.</li><li>6. Ability to use a common industrial CAD package to create engineering documentation.</li></ol>
<b>Relationship of Course to Mechanical Engineering Student Outcomes:</b>	SO 1: Introduce (I) SO 2: SO 3:

SO 4:  
SO 5:  
SO 6:  
SO 7:

**Topics Covered:**

1. Detail Drawings, Size Tolerances, Notes
2. Clearance, Interference & Transition Fit Calculations
3. Fundamental Geometric Dimensioning & Tolerancing (ASME-Y14.5M)
4. Design of Functional Layouts
5. Assembly Drawings & Bill of Materials
6. Threads & Fasteners
7. Weld Symbology
8. CAD Skills: Parametric Modeling, Dimensioning, Tolerance Specification, Assembly Mates, Functional Assemblies

**Laboratory Activities:**

Individual and group assignments and projects that require students to use industrial CAD software to:

Create Part Models encompassing:

Extrusions, revolves, and lofts

Patterns, holes, and common features

Construct multi-view detail drawings including:

Dimensions, size tolerances, and notes

Datums, basic dimensions, and geometric tolerances

Produce functional multi-part assemblies

Prepare assembly drawings including bill of materials

Instructor gives group and individual assistance as needed.

**Class/Lab Schedule:**

One 170 minute lab per week

**Contribution of Course to Meeting the Professional Component:**

- |  |           |
|--|-----------|
| (a) College-level math & basic sciences: | 0 credits |
| (b) Engineering Topics                   | 1 credits |
| Design - Yes                             |           |
| (c) General Education:                   | 0 credits |
| (d) Other:                               | 0 credits |

**Prepared by:** John Larson

**Date:** 02/27/20

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