

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

**ME 128 Introduction to Mechanical Engineering I (1 Unit) Required**

**Course Description:** (2013-15 Catalog) Introduction to Mechanical Engineering and its application in professional practice. Includes design analysis, testing and dissection of mechanical engineering systems, from simple machines to more complicated systems. Introduction to engineering graphic communication. Introduction to the HVAC, Manufacturing and Mechatronics Concentrations. Includes the first quarter of cornerstone service learning project.

1 laboratory.

**Prerequisite Courses:** None.

**Prerequisites by Topic:** None.

**Textbook:** (and/or other required material) Laboratory Manual provided by the instructor.

**References:** None

**Course Coordinator/Instructor:** Hemanth Porumamilla, Assistant Professor of ME

**Course Learning Outcomes:** On completion of this course students will be able to:

1. Knowledge of the scope of mechanical engineering. (Criterion 3A).
2. Understand basic mechanical devices and systems. (Criterion 3A).
3. Apply the engineering design process and considerations. (Criterion 3B)
4. Formulate design requirements for open-ended broad engineering problem. (Criterion 3C/3D/3F/3H).

<b>Relationship of Course to MECHANICAL ENGINEERING Program Outcomes:</b>												
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>m</i>
<b>H</b>	<b>H</b>	<b>M</b>	<b>L</b>	<b>H</b>	<b>L</b>	<b>M</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>H</b>	<b>H</b>	<b>M</b>

**Topics Covered:**

1. Three Springs - Students discover the properties of three different springs (helical, torsional, leaf) and calibrate them. The Pre-lab portion introduces the use of a computer graphing software and the lab report introduces the concept of preparing formal written reports.
2. Drill Dissection (Includes exploded Drill Sketches) - dissect and

- electric drill, describe each part's function and sketch part
3. Heating Ventilation Air Conditioning (HV AC)- measurements of air flow and heat transfer HV AC 2D Sketches drawings or system.
  4. Cornerstone service learning project kickoff- Introduce cornerstone project and necessity of shop mandatory red tag for operating in the shop safely.
  5. Internal Combustion Engine Dis-assembly (Sketching and functional description of each part). Students continue work on cornerstone project.
  6. Internal Combustion Engine Assembly using notes and sketches from previous week. Students continue to work on cornerstone project.
  7. Introduction to Loads and Structures (Composites Lab)- testing of different materials to show different load bearing characteristics. Students continue work on cornerstone project.
  8. Cornerstone mock-up fabrication in the Hangar Shop (must have red tag to do this lab)
  9. Cornerstone Design Concept Review - presentation by each student group explaining their design requirements and concept including function.
  10. Understanding and Using Micro-controllers- introduction to programming, mechatronics and robotics

**Laboratory Projects:** Same as “Topics Covered.”

**Class/Lab Schedule:** One 170-minute lab per week

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

- |   |              |
|---|--------------|
| (a) College-level mathematics and basic sciences: | 0 credits    |
| (b) Engineering Topics:                           | 0 credits    |
| Design  | 0.25 credit  |
| (c) General Education:                            | 0.75 credits |
| (d) Other:  | 0 credits    |

**Prepared by:**  
**Hemanth Porumamilla**

**Date: 5/5/2014**

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