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: 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).

Relationship of Course to MECHANICAL ENGINEERING Program Outcomes:

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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 (HVAC)- measurements of
   air flow and heat transfer HVAC 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
ciences: 0 credits
(b) Engineering Topics:
   Design 0.25 credit
(c) General Education: 0.75 credits
(d) Other: 0 credits

Prepared by: Hemanth Porumamilla
Date: 5/5/2014