

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

**ME 229 Introduction to Mechanical Engineering For Transfer Students (2) Required for Transfer Students**

**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. Investigation of personal and professional ethics. Familiarization with the ME curriculum including cooperative education and international exchange opportunities.

1 lecture + 1 laboratory.

**Prerequisite Courses:** None

**Prerequisites by Topic:** None

**Textbook:** (and/or other required material) None

**References:** None

**Course Coordinator/Instructor:** Sarah Harding, Lecturer, ME Department

- Course Learning Outcomes:**
1. Students will **investigate** mechanical systems through hands on laboratory experiences.
  2. Students will **design** a simple system.
  3. Students will **explore** ethics in the context of being a student and a member of a profession.
  4. Students will **produce** a graduation plan demonstrating a good understanding of the ME curriculum.
  5. Students will **distinguish** between the available concentrations in the ME curriculum.
  6. Students will **know** of the co-curricular activities available as an ME major at Cal Poly.
  7. Students will **discuss** career opportunities in ME.

Relationship of Course to MECHANICAL ENGINEERING Program Outcomes:												
<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>
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- Topics Covered:**
1. Introduction to the mechanical engineering design curriculum
  2. Design process: Search for problems, problem definition, idea

generation techniques, idea selection, implementation, evaluation, and iterations.

3. Considerations in Design: Strength and strain, forces, dynamics, materials, size, human factors, energy required, power transmission, etc.
4. Mechanical Engineers in Industry: Field Trip/Tour or Guest Speaker
5. Individual and Team projects in dissection of mechanical devices and in design.
6. Introduction to ethical considerations in engineering.
7. Laboratory Safety, safe shop practice

**Laboratory Projects:**

1. Reverse Engineering: dissection of household appliances, electric drills, compressors, and lawn mower engines. (5 labs)
2. Introduction to Experimentation, Data Analysis, and Reporting: Students discover the properties of three different springs (helical, torsional, leaf) and write a formal report discussing the results. (1 lab)
3. Introduction to Mechatronics Concentration: Students are directed to develop open-ended designs to generate certain behaviors using basic mechatronics components. (1 lab)
4. Introduction to HVAC&R Concentration: Students collect data from a household AC unit and compare results to manufacturer. (1 lab)
5. Design Theory and Practice: Design projects include a conceptual design, prototype build, and a final design (2 labs)
6. Real-World Engineering (Field Trip): Students tour one of several engineering facilities on or off campus to see real engineering equipment in use. (1 lab)
7. Basic Shop Practice and Fabrication Techniques: Students tour the student machine shop and take the safety certification test.

**Class/Lab Schedule:**

One 1-hour lecture and one 3-hour lab per week.

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

- |   |                 |
|---|-----------------|
| (a) College-level mathematics and basic sciences: | 0 credits       |
| (b) Engineering Topics: Design                    | 2 credit<br>Yes |
| (c) General Education:                            | 0 credits       |
| (d) Other:  | 0 credits       |

**Prepared by:**  
Sarah Harding

Date:  
05/05/2014

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