

## MECHANICAL ENGINEERING PROGRAM

### ABET COURSE SYLLABUS

#### **ME 100L: Introduction to Engineering Design Lab (1 credit): Required Course**

##### **Course Description (2008-2010 Catalog):**

Introduction to techniques and their practice used in the design process: sketching, dimensioning, brainstorming, decision trees, decision matrices, P.C. software packages, experimentation.

**Prerequisite Course:** Corequisite ME 100

**Prerequisite by Topic:** Introduction to Mechanical Engineering

**Textbook:** A.R. Eide, R.D. Jenison, L.H. Mashaw, L.L. Northup, *Introduction to Engineering Design and Problem Solving*, 4th Edition, McGraw Hill

**Other Reference Material:** N/A

**Course Coordinator:** Georg F. Mauer, Professor

##### **Course learning outcomes:**

- **Basic engineering calculations.** Convert quantities from one set of units to another such as SI and US Customary and apply basic algebraic and geometrical concepts to solve simple technical problems.
- **Engineering Design.** Design and optimize the overall performance of an autonomous robotic vehicle, using a supplied kit of components. Apply the engineering design method to develop an effective product that meets the stated performance specifications. Learn to organize your design project, divide tasks and cooperate in a team.
- **Programming an Embedded Controller.** Describe your analysis, design, and experimental results in a final team report. Present the results orally before the entire class.
- **Demonstrate a Complete and Functioning Product.** Using sets of specified parts, assemble the product you designed in a team effort. Demonstrate the completed product in a formal presentation and competition at the end of the semester.
- **Final Project Report.** Describe your analysis, design, and experimental results in a final team report. Present the results orally before the entire class.

**Relationship of Course to Mechanical Engineering Program Educational Outcomes:**

Goal 1: Provide mechanical engineering graduates with technical capabilities.					Goal 2: Prepare the mechanical engineering graduates to have effective workplace skills.				Goal 3: Instilling a sense of responsibility as a professional member of society.			
<b>1.a</b>	<b>1.b</b>	<b>1.c</b>	<b>1.d</b>	<b>1.e</b>	<b>2.a</b>	<b>2.b</b>	<b>2.c</b>	<b>2.d</b>	<b>3.a</b>	<b>3.b</b>	<b>3.c</b>	<b>3.d</b>
<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>		<b>H</b>	<b>M</b>	<b>M</b>			

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**Topics Covered:**

<u>CLASS</u>	<u>Assignment</u>
1	Define a set of Design specifications
2	Identify need: Describe problem and possible approach
3	Begin Literature Search
4	Technical drawings I
5	Technical drawings II
6	Technical drawings III, Complete overall design
7	Present completed vehicle. Demonstrate all functions:
8 - 12	Programming and Testing
13	Complete Literature search
14	Robot Competition: Final Report and Presentation of completed Robot.

**Laboratory Projects:** yes

**Class/Laboratory Schedule:** class meets 1 time per week, 180 minutes per session

**Assessment of Student Progress toward Course Objectives**

Weekly Lab reports, plus one Team Final Report, Plus one Oral Team Presentation

**Class/Laboratory Schedule:** multiple lab sections (Fall Semester)

**Contribution of Course for meeting Professional Component:**

- (a) Mathematics and basic sciences: 0 credit
- (b) Engineering Topics (Design/Science): 1 credit
- (c) General Education: 0 credit
- (d) Others: 0 credits

**Prepared By:**

Georg Mauer

**Date:**

September 11, 2009