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


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:

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

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