

<b>COURSE NUMBER:</b> ME 4054W, 4 credits	<b>COURSE TITLE:</b> Design Projects
<b>TERMS OFFERED:</b> Fall and Spring	<b>PREREQUISITES:</b> ME 3222, ME 4031W
<b>TEXTBOOKS/REQUIRED MATERIAL:</b> None	<b>PREPARED BY:</b> Professor Durfee <b>DATE OF PREPARATION:</b> June 11, 2007
<b>COURSE LEADER(S):</b> Professors Durfee, Mantell, Chase, Simon, Erdman, Garrick, Davidson, Cui	<b>CLASS/LABORATORY SCHEDULE:</b> One 50 minute lecture, two 3-hour design team meetings (one with project advisor) <b>CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES:</b> 100 % Engineering Topics
<b>CATALOG DESCRIPTION:</b> Students work in teams and undertake a single, substantial design project. Design problems are open-ended. Lecture covers product design process. Teams give formal presentation of progress at mid-semester design review and show completed work at the design show.	<b>COURSE TOPICS:</b>  <ol style="list-style-type: none"> <li>1. Design process</li> <li>2. Customer needs</li> <li>3. Project management</li> <li>4. Concept generation and selection</li> <li>5. Prototyping</li> <li>6. Cost and price of products</li> <li>7. Presentations and documentation</li> </ol>

<b>COURSE OBJECTIVES</b>	<ol style="list-style-type: none"> <li>1. Enable students to use their skills as an engineer in the synthesis of a new product, device or process. The design problem is open-ended, and without a unique, correct solution.</li> <li>2. Provide instruction on engineering design methodology that can be used to tackle any project that entails synthesis.</li> </ol>
<b>COURSE OUTCOMES</b>	<p><b>(Letters shown in brackets are linked to ABET outcomes a-k)</b></p> <ol style="list-style-type: none"> <li>1. Students have demonstrated a best practices design process [c, i, k]</li> <li>2. Students have used knowledge and analysis learned in their fundamental engineering courses to aid in the design [a, c]</li> <li>3. Students have worked in a team to complete a design that addresses the customer's needs. [c, d, f, g]</li> <li>4. Students have kept a record of their design activities in a design notebook [c, g]</li> <li>5. Students have presented their design in oral form at the mid-project review, in "tradeshow" format at the public Design Show and in written form in a</li> </ol>

	<p>comprehensive report [g]</p> <ol style="list-style-type: none"> <li>6. Students have a constructed prototype design or a simulation as appropriate [c, g]</li> <li>7. Students have demonstrated technical writing proficiency in a comprehensive design report</li> <li>8. Students have demonstrated appropriate ethical decisions in interpreting the impact of their work</li> <li>9. Students have demonstrated knowledge of the technical state of the art and the broader context of their project area.</li> </ol>
<b>ASSESSMENT TOOLS:</b>	<ol style="list-style-type: none"> <li>1. Intermediate design deliverables</li> <li>2. Mid-project review presentation</li> <li>3. Weekly progress memos</li> <li>4. Design notebook</li> <li>5. Design Show (project reviewed by a professional jury)</li> <li>6. Design report</li> </ol>

## ME 4054W

### *Nature of Changes:*

Under Course Objectives, changed “design” to “engineering design” to reflect the focus of the course.

Deleted old Course Outcome 3 (“Students have interacted with the project sponsor and project advisor to produce a quality design [f]”) as a result of the 2007 course assessment process.

Added Course Outcomes 8, 9 and 10 as a result of the 2007 course assessment process.

Changed Course Outcome 7 to include simulation prototypes as a result of the 2007 course assessment process.

Outcome 1 was change to: Students have demonstrated a best practices design process [c, i, k]

Outcomes 3 and 5 were combined to: Students have worked in a team to complete a design that addresses the customer’s needs [c, d, f, g]

Updated list of course leaders.

Fixed several typos and grammatical errors.