MECHANICAL ENGINEERING PROGRAM

ABET COURSE SYLLABUS

ME 498 - Senior Design Project II (2 credit): Required Course

Course Description (2008-2010 Catalog): Synthesis course to involve students in the design process. Analysis, design completion, and presentation.

Prerequisite Course: ME 497

Textbook: Product Design and Development, 4th edition, K.T. Ulrich and S.D. Eppinger, MCGraw-Hill (suggested);

Other Reference Material: Innovation on Demand, New Product Development Using Triz, V. Fey and E. Rivin, Cambridge (suggested);

Course Coordinator: Z.Y. Wang, Associate Professor

Course learning outcomes:

1) The general scope and feasibility of the design should be accomplished, and the design is to be completed with full documentation during the second semester.
2) This design experience should involve elements defined by the Accreditation Board for Engineering and Technology (ABET).
3) To receive a passing grade in the class, each student will have to demonstrate that the design has met objectives by considering various alternatives and meeting predefined constraints;
4) Understanding the impact of engineering solutions in a global and societal context and professional and ethical responsibility.
5) Multi-disciplinary projects and producing prototypes are strongly encouraged.

Relationship of Course to Mechanical Engineering Program Educational Outcomes:

Goal1: 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.			
1.a	**1.b**	**1.c**	**1.d**	**1.e**	**2.a**	**2.b**	**2.c**	**2.d**	**3.a**	**3.b**	**3.c**	**3.d**
H	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**M**	**M**	**L**

(L)ow (M)edium (H)igh

Topics Covered:

1) Recognition of the needs (Who are the real customers? Who will buy the product? Is it profitable to develop the product? Is it feasible to develop the product?)
2) Definition of the problem (problem statement, what this design is intended to accomplish – customers' requirements and design specifications, clearly outline the overall function that needs to be accomplished and provide sub-function descriptions);
3) Gathering of information (history of the problem, any similar designs?)
4) Design conceptualization (decompose your designs (3-5) into subsystems; start drawings - sketch)
5) Evaluate 3-5 conceptual designs and choose the best design by feasibility, technology readiness, and decision matrix that includes technical requirements, costs, easy to produce, and product safety and liability, etc.
6) Decompose design into components; Perform stress/strain/deformation analyses on the components of your design.
7) Modify design based upon performance, cost, design for manufacture, and design for assembly.
8) Produce layout drawings, assembly drawings, and some detailed drawings with dimensions and tolerances.
9) Order all parts and secure components.
10) Document all the modifications made in MEG498 for the design, provide engineering analysis to support your modifications.
11) Prototype assembly and cost analysis.
12) All changes from original design have been documented and analysis must be available to justify the changes.
13) Guidelines for product testing should be developed for the next five weeks (stating the goals of performance evaluation, testing methods, tools for measurement, and your plan to hear customers' comments)

Laboratory Projects: N/A

Class/Laboratory Schedule: N/A

Assessment of Student Progress toward Course Objectives

Two monthly presentations, ten monthly briefings, and final presentation and final report

Class/Laboratory Schedule: MW 2:30-3:20 PM (Spring Semester)

Contribution of Course for meeting Professional Component:

(a) Mathematics and basic sciences:	0 credit
(b) Engineering Topics (Design/Science):	2 credit
(c) General Education:	0 credit
(d) Others:	0 credits

Prepared By: **Date:**

Z.Y. Wang 10/22/2009