ME 55300
PRODUCT AND PROCESS DESIGN

Course Outcomes

1. Reinforce the philosophy that product and process development is resource intensive.
2. Integrate marketing and business strategy considerations into the design and manufacturing plan.
3. Broaden skills in using modern CAD design tools and methods for product prototyping, integration of business issues and information technology into the product design process.
4. Prototype the product, design and process plan and marketing strategy (mini-business plan).
5. Integrate development with use of information technology infrastructure.

Opportunity Identification (4 wks)
1. Customer and market identification
2. Product Planning
3. Product Specification
4. Marketing considerations

User Centered Design (6 wks)
1. Concept development
2. Principles of good design
3. Product interfaces
4. Product architecture
5. Tools: Design for X

Product Design and Prototyping (5 wks)
1. Product prototyping
2. Rapid tooling
3. Intellectual Property Issues
4. Supply chain integration
5. Information technology

Example Products (Each team develops their own concept to a project)
1. Ergonomic Auditory Device
2. Cargo Keeper
3. Ford's Vehicle Seat Tray
4. Ladder Leveling Device
5. The Smart Mat
6. Get Tanked
7. Cleaner Dog Paws
8. Nozzle2K

Revision Date: 6/17/2013
**1. COURSE NUMBER AND NAME:** ME 55300 Product and Process Design

**2. CREDITS AND CONTACT HOURS:** 3 credits  
   a. Lecture – 3 days per week at 50 minutes for 16 weeks

**3. COURSE COORDINATOR OR INSTRUCTOR:**  
   K. Ramani

**4. TEXTBOOK:**  
   No textbook required

**5. SPECIFIC COURSE INFORMATION:**  
   a. **Catalog Description:** Fundamental principles of product and process design to produce a marketable product, develop a preliminary business strategy, and construct an operation prototype. Overview of relevant principles related to product and process design. Market analysis, design parameters, manufacturing prototype plan, production process plan, and business strategy developed in teams. Broad overview of the entire product development process including patents, commercialization of new technologies and the highly interdisciplinary nature of product design through industry guest lectures. Impact of information technologies and the internet on product design, prototyping, marketing and customization. Product prototype is required. Design and product software – information technology service-type concepts. Typically offered in the spring.

   b. **Prerequisites:**  
      First Semester Senior Standing or Higher

   c. **Status:**  
      Elective

**6. SPECIFIC GOALS FOR THE COURSE:**  
   a. **Course Outcomes:**  
      1. Reinforce the *philosophy* that product and process development is resource intensive.  
      2. Integrate *marketing* and *business* strategy considerations into the design and manufacturing plan.  
      3. Broaden skills in *using modern CAD design tools and methods* for product prototyping, integration of business issues and information technology into the product design process.  
      4. Prototype the *product, design and process plan* and *marketing strategy* (mini-business plan).  
      5. Integrate *development* with use of information technology infrastructure.

   b. **Related ME Program Outcomes:**  
      A1. Engineering Fundamentals; B3. Prof/Ethical Responsibility;  
      A3. Experimental Skills; B5. Life-Long Learning;  
      A4. Modern Engr Tools; C1. Leadership;  
      A5. Design Skills; C2. Global Engineering Skills;  
      A6. Impact of Engr Solns; C3. Innovation;  
      B1. Communication Skills; C4. Entrepreneurship  
      B2. Teamwork Skills

   c. **Status:**  
      Elective

**7. LIST OF TOPICS:** See following page.

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**PREPARED BY:** K. Ramani  
**REVISION DATE:** June 17, 2013