ME553 Product and Process Design
PURDUE UNIVERSITY (Spring 2014)

Credit units	3
Meeting times	9:00-10:15 Tues & Thurs, POTTER 268
Course instructor	Karthik Ramani, Office ME3176, ramani@purdue.edu, 765-494-5725
Teaching assistant	Bill Bernstein, Office ME3164, wbernste@purdu.edu
WIKI support	Ke Huo, Office ME3164, khuo@purdue.edu
Tele-Conference number	Off-campus : 877-217-0834
International Dial-In	303-330-0440
Engineering Professional Education	Engineering Professional Education, 765-494-7015 877-598-4233 (toll-free, US only). Email: proed@purdue.edu
Course notes	Harvard business reviews and other papers will be posted on Blackboard. PDF version of class presentations will also be available for download.
Course URL	https://engineering.purdue.edu/productdesign
Purdue Blackboard	https://mycourses.purdue.edu
Design WIKI	https://globalhub.org/
Type of Instruction	Lecture, 3 hours per week. Involves one individual assignment and one course project.
Prerequisite	BS in Engineering or consent of instructor.
Grading	Individual Design Problem: 30%, Group Project: 60%, WIKI/Class participation: 10%

Course Summary:

This course is as much about design thinking and learning as it is about design innovation, creativity, and doing design. The focus is on learning 'to design' and about 'design processes'. The design of artifacts is addressed from a multidisciplinary perspective that includes opportunity determination through inspiration, ideation, and implementation using design thinking frameworks. The methodologies cover understanding and defining opportunities for innovation, developing and producing globally competitive products.

In the course project, students work in teams to apply the methods on a design project for concept generation, product definition, prototyping and design verification. In the individual assignment you will cover Modeling for Design and designing where all the students will be given the same problem definition. Each student will maintain an individual DESIGN NOTEBOOK on the WIKI. The innovation coaches and instructor will periodically inspect the design notebook. This course will allow engineers to learn the principles of innovative product design. We will draw upon current material and cases.

About the Project:

On-campus and off-campus project teams (consisting typically of 4 students) will choose a project from the opportunities generated by their teams. We will form the teams for both on-campus and off-campus students. The final deliverable of the project is a comprehensive product definition and specification with either (or both) a physical or digital prototype. The WIKI will be used for periodic evaluation during the conference calls. We plan to have one every three weeks starting from week the opportunity is chosen by the teams.

Grading Breakdown:

Individual Design Problem		**30%**
Group Project [Breakdown below]		**60%**
A2: Opportunity Identification [Individual]	**5%**	
A3: Value Opportunity Analysis	**5%**	
A4: Opportunity Understanding	**8%**	
A5: Concept Generation	**10%**	
A6: Prototyping	**12%**	
Final Presentation	**10%**	
Final Deliverable: 6 min video	**10%**	
Wiki & Participation		**10%**

Final grade allocations are subject to change.

Course Contents:

- Product development process
- Product Planning
- Concept Generation
- Design as communication
- Exploring Design Spaces
- Innovation
- Creativity
- Market Understanding for Design
- Product Platform Planning
- Product Architecture
- Decision Making
- Value Analysis
- Environmental Issues
- Sustainable Design
- Supply Networks
- Project Final Presentation