THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Fundamentals of Product Design Engineering

MECHENG 5682.01

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Lecture covering the fundamentals of the product design process, from concept creation to final implementation, including product architecture and design for manufacture and assembly. Only open to students enrolled in majors in the College of Engineering.

Prerequisites and Co-requisites:
Prereq: Jr, Sr, or Grad standing in the College of Engineering, or permission of instructor.

Course Goals / Objectives:
- Provide the student with a thorough understanding of the entire product design process: from the initial inception of a concept based on user needs through system and detail design to product fabrication.
- Gain an appreciation for the roles played by disciplines other than engineering in the development of products, such as industrial design and marketing.
- Understand product system architecture, and how it can enable or impede rapid product evolution and the development of flexible product portfolios
- Understand the basic tenets of design for assembly, disassembly, and manufacturing

Course Topics:

- Understanding product constraints: physical, technological, user, market, cultural and aesthetic.
- Developing product opportunities: user observation, interviews, trends
- Distilling information from users and focus groups
- Sources for design ideation; concept creation and selection methods
- Product evolution; predicting technological trends and scenario development
- Developing product goals and specifications. Product teardowns and benchmarking
- Developing product portfolios; understanding the economics of product development
- Product architecture: the implications of system integration and modularity
- Design for Humans
- Design for assembly and disassembly
- Processes and materials
- Toyota production system
- Lean manufacturing
- Designing the future

Designation:

Elective