Product Planning & Development  
(21-423)  
Advanced Manufacturing Laboratory  
Department of Industrial Engineering  
Sharif University of Technology  

Session # 1

Course Description

- **Instructor**  
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- **Recommended prerequisite**  
  * Manufacturing process I (21-418)

- **Class time**  
  * Sunday-Tuesday 18:00-19:30

- **Course evaluation**  
  * Mid-term (25%)  
  * Final exam (40%)  
  * Quiz (5%)  
  * Exercise (Manufacturing Lab.) (30%)
Course Description (Continued ...)

- Mid-term session:
  - Wednesday: 9th Ordibehesht 1394, 16:30 ~ 18:30

- Final Exam:
  - Monday: 1st Tir 1394, 09:00 ~ 11:30

- Reference:

Course Description (Continued..)

- Contents:
  - Product development in the changing Global world
  - Stages of Product Development
  - The Structure of the Product Design Process
  - Early design: Requirement definition and conceptual Design
  - Trade-off analyses: Optimization using cost and utility Metrics
  - Detailed design: Analysis and Modeling
  - Design Review: Designing to Ensure Quality
  - Production System: Strategies, planning, and methodologies
  - Production System Development
  - Planning and Preparation for Efficient Development
  - Supply chain: Logistics, packaging, supply chain, and the environment
Course Description (Continued..)

- **Contents:**
  - Design for people: ergonomics, reparability, safety, and product liability
  - Designing for assembly and disassembly
  - Designing for maintenance
  - Designing products for functionality

Course Description (Continued..)

- **Contents:**
  - Product development in the changing Global world
    - Production Development over Time
    - Industrial Revolutions
    - Toyota Production System
    - Production Development: A Summary
Course Description (Continued..)

- Contents:
  - Stages of Product Development
    - Early design: requirement definition and conceptual design
    - Trade-off analyses: optimization using cost and utility metrics
    - Detailed design: analysis and modeling
    - Test and evaluation: design reviews, prototyping, simulation, and testing
    - Manufacturing: strategies, planning, and methodologies
    - Supply chain: logistics, packaging, supply chain, and the environment

Course Description (Continued..)

- Contents:
  - The Structure of the Product Design Process
    - What Is Design?
    - The Changing Design Process
    - Design Paradigms
    - The Requirements for Design
    - The Design Process
Course Description (Continued..)

- **Contents:**
  - **Design Review: Designing to Ensure Quality**
    - Why Quality Control?
    - Reactive versus Proactive Quality Control
    - Procedures for Incorporating High Quality in Design Stages

Course Description (Continued..)

- **Contents:**
  - **Production System**
    - A Systems Perspective
    - From Business Plans to Production
    - The Production System's Contribution to Competitiveness
    - Production System and Manufacturing Strategy in Balance
  - **Production System Development**
    - Industrial Development of Production Systems
    - Production System Designers
    - Fundamental Concepts and the Knowledge Area
    - The Development Process
    - The Evaluation Process
    - Production Development: Part of Product Realization
Course Description (Continued..)

- Contents:
- Product development in the changing Global world
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