

# *Product Planning & Development*

## *(21-423)*

*Advanced Manufacturing Laboratory  
Department of Industrial Engineering  
Sharif University of Technology*

*Session # 1*



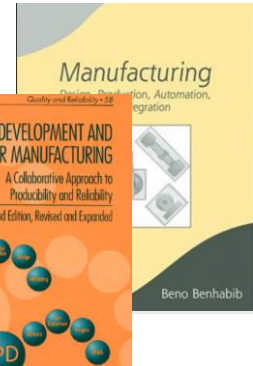
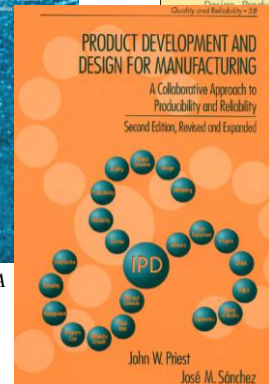
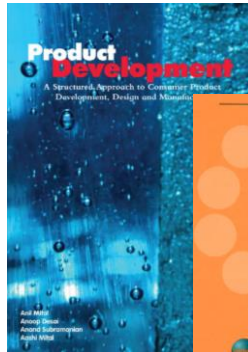
## *Course Description*

- ***Instructor***
  - *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
  - *Email: [FValilai@sharif.edu](mailto:FValilai@sharif.edu), Tel: 6616-5706*
  - *Website: [Sharif.edu/~fvalilai](http://Sharif.edu/~fvalilai)*
- ***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: 9<sup>th</sup> Ordibehesht 1394, 16:30 ~ 18:30
- **Final Exam:**
  - Monday: 1<sup>st</sup> Tir 1394, 09:00 ~ 11:30
- **Reference:**
  - John Priest, Jose Sanchez; "Product Development and Design for Manufacturing: A Collaborative Approach to Producibility and Reliability, Second Edition", CRC Press, 2001
  - Mital et al. , "Product Development A Structured Approach to Consumer Product Development, Design, and Manufacture", Butterworth-Heinemann, 2008
  - Benhabib, Beno; "Manufacturing: Design, Production, Automation, and Integration", 2003, Marcel Dekker Inc, New York
  - Abouel Nasr, Emad; Kamrani, Ali K.; "Computer-Based Design and Manufacturing: An Information-Based Approach", 2007, Springer, New York

Advanced Manufacturing Laboratory, Department of Industrial Engineering, Sharif University of Technology  
Product Planning & Development (21423), Session #1



## 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

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## *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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