

Product Planning & Development

(21-423)

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

Session #2



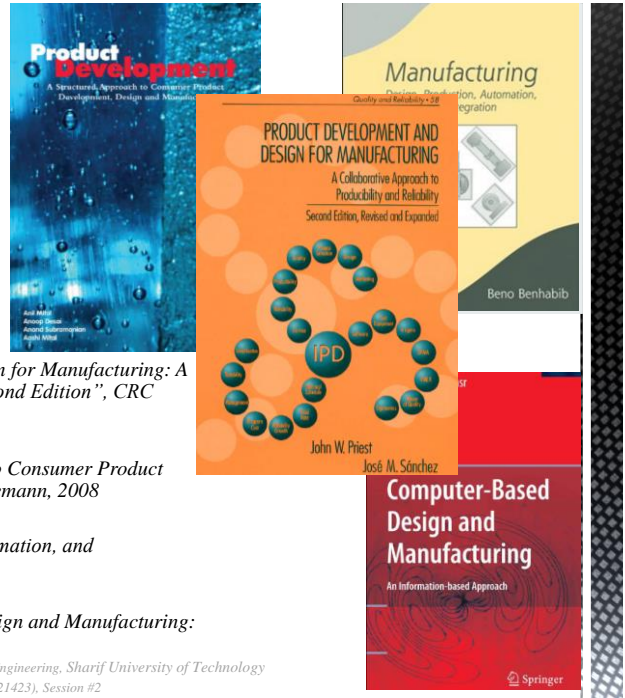
Course Description

- ***Instructor***
 - *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
 - *Email: FValilai@sharif.edu, Tel: 6616-5706*
 - *Website: 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: 9th Ordibehesht 1394, 16:30 ~ 18:30
- **Final Exam:**
 - Monday: 1st 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

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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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Product development in the changing Global world

- *We are entering a new era of fundamental change in products, services and how they are delivered.*
- *As customers, we want customized products with more performance and options at a lower cost.*
- *At the same time, the resources that organizations need to remain competitive; knowledge, people, equipment, facilities, capital. and energy are scarce or more costly.*
- *Product development requires better strategies and methods that are flexible, fluid and promote simplicity.*
- *The key is a systematic application of best practices that focus on reducing technical risk in a changing environment.*

Product development in the changing Global world

“If things seem under control, you’re not going fast enough.”

- *Today’s world of business is like the speed-oriented, technology driven world of car racing.*
- *Things are changing so quickly due to advances in technology, that to keep pace and stay competitive requires a company to be able to adapt to the changes at lightning-fast speed.*

Product development in the changing Global world

- *not only there is a need to focus product development efforts on a product's*
 - *function,*
 - *project schedules and deadlines,*
 - *and cost,*
- *but also in other life cycle issues such as*
 - *Customization,*
 - *Technical risk,*
 - *Simplicity,*
 - *Produce-ability ,*
 - *Quality,*
 - *Innovation*
 - *and service.*

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Product development in the changing Global world

- *Today's customer wants value, a product that is easy to purchase and meets specific needs.*
- *Value is expressed as the relative worth or perceived importance of a product to the customer.*
- *It can be measured by a series of critical marketing parameters such as innovation, styling, performance, cost, quality, reliability, service, and availability.*
- *Customers define value in relation to their personal expectations for the product or service offered, which means every company must meet an infinite number of expectations.*

Product development in the changing Global world

- *A company has to be willing to put itself at risk everyday through innovation.*
- *The competitors are committed to change and developing innovative solutions.*
- *New technologies, markets and aggressive schedules require a company to take some risks.*
- *A key goal of product development to is to identify these technical risks early in the development process and implement methods to minimize their potential occurrence and effect.*

Product development in the changing Global world

- *New business models*
- *Successful companies will be those whose business model can respond to change more quickly and more effectively than their competitors.*
- *Technology can drastically changes business models and manufacturing practices.*
- *Technology's true potential is realized when it is employed in innovative ways that change traditional business practices.*

Product development in the changing Global world

- *Global business perspectives*
- *Technology development especially Information Technology provides new opportunities as well as threats.*
- *Consumers can receive worldwide information freely from around the world and purchase items offshore in many countries.*
- *Sales can come from anywhere and will be globally visible.*
- *Firms are now able to acquire resources, skills and capital from global sources that best satisfy their business objectives.*

Product development in the changing Global world

- *Global business perspectives*
- *Business models and product development strategies have to be more tailored to the particular situation;*
- *The challenge is to quickly adapt to any type of new customer requirements, or to move in a totally new direction while maintaining a consistent vision for the enterprise.*

Product development in the changing Global world

- *Product development*
- *Innovation and implementing new technologies require companies to take greater risks.*
- *The key is to identify, reduce and control these risks without limiting innovation, creativity, simplicity, and flexibility.*
- *Most of the problems found in current product development can be traced back to inadequate design or design management.*

The focus needs to be on the fundamentals of successful product development