

Product Planning & Development

(21-423)

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

Session #3



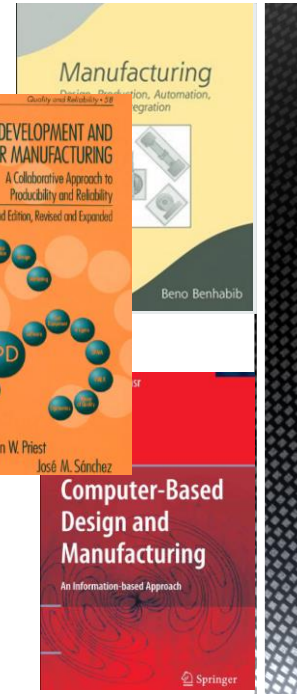
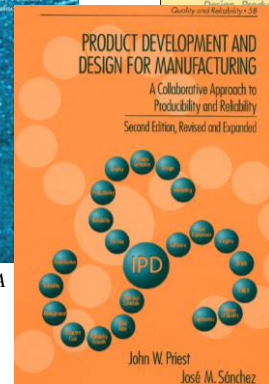
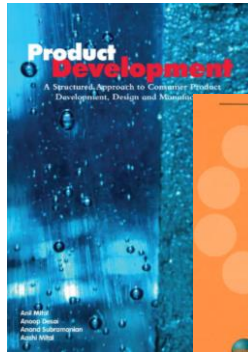
Course Description

- ***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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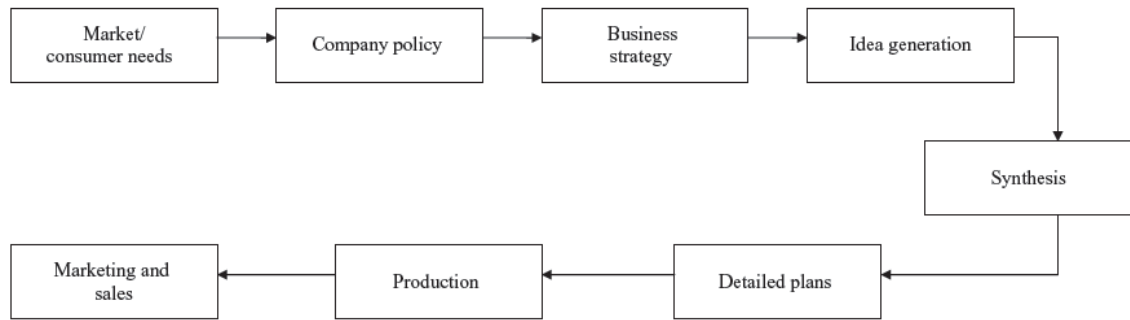


Course Description (Continued..)

- **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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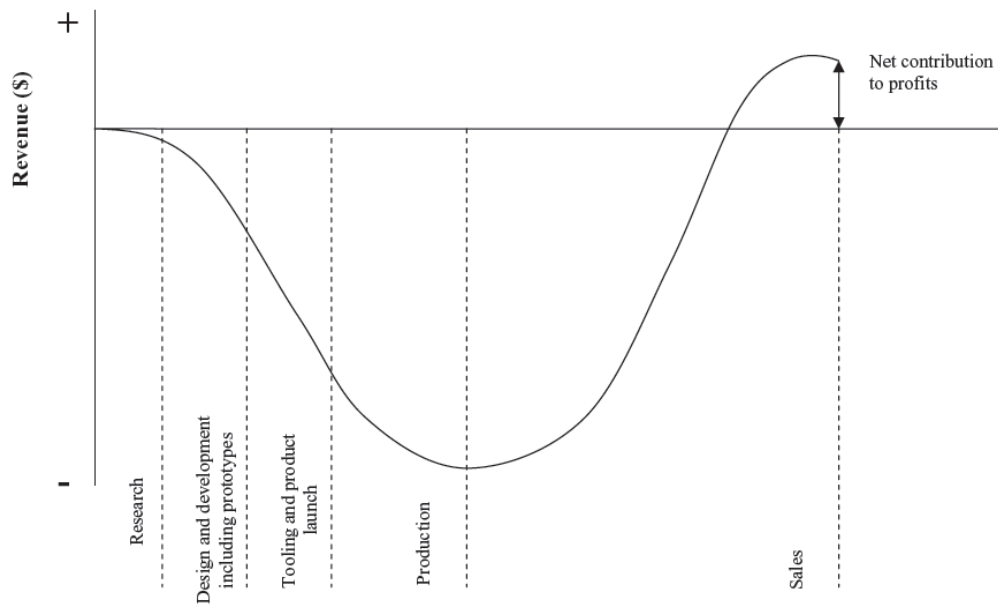
Product Development



Product Development

- *Attributes of successful product development*
 - *Cost: both the cost of producing the product and the total cost of developing it.*
 - *Quality: the quality of the product.*
 - *Product development time: from assessing market needs to product sale.*
 - *Development of know-how: the ability to repeat the process for future products*

Product Development



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Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*

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Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*
 - *Customer Focus and Market Orientation*

Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*
 - *Customer Focus and Market Orientation*
 - *Telling the World You Have a Good Product*

Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*
 - *Customer Focus and Market Orientation*
 - *Telling the World You Have a Good Product*
 - *Availability of a Systematic New Product Process*

Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*
 - *Customer Focus and Market Orientation*
 - *Telling the World You Have a Good Product*
 - *Availability of a Systematic New Product Process*
 - *Market Attractiveness*

Product Development

- *Key factors to developing successful new products*
 - *Uniqueness*
 - *Customer Focus and Market Orientation*
 - *Telling the World You Have a Good Product*
 - *Availability of a Systematic New Product Process*
 - *Market Attractiveness*
 - *Experience and Core Competencies*

Stages of the Product Development

- *Strategy for new product development*
 - *The primary objective in establishing a strategy and a business plan for developing a new product is to ensure that all concerned parties “buy into” the effort and a consensus is reached on the fundamental inputs to the plan*
 - *Product development strategy activities*
 - *Determining the company’s growth expectations from the new products*
 - *Gathering information of interest regarding capabilities, market, and the customers*
 - *Determining what opportunities exist*
 - *Setting criteria for inclusion of product(s) in the company’s portfolio of products*
 - *Creating the product portfolio (new, modified, and existing).*
 - *Managing the product portfolio to maximize profitability*
- ➡ ▪ ***Developing Product development plan***

Stages of the Product Development

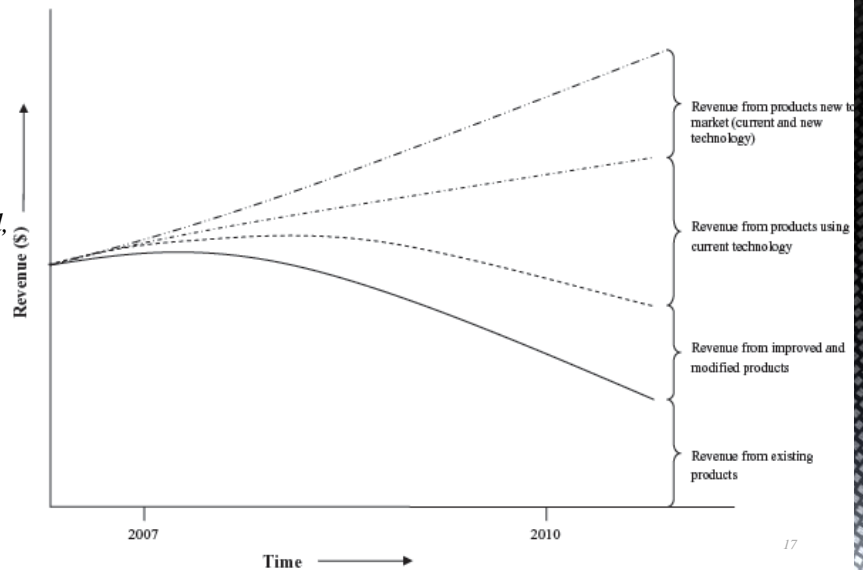
- *Strategy for new product development*
 - *Product development strategy activities*
 - *Setting criteria for inclusion of product(s) in the company's portfolio of products*
 - *The company expects that including a new product in its portfolio of products will increase its sales revenue and profitability.*
 - *Typically, all businesses expect a minimum return on investment (ROI).*
 - *Other Like: Net Promoter Score (NPS),...*

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Stages of the Product Development

- *Strategy for new product development*
 - *Product development strategy activities*
 - *Creating the product portfolio (new, modified, and existing).*
 - *Managing the product portfolio to maximize profitability*



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Stages of the Product Development

- *Developing Product development plan*
 - *Understanding Consumers and Their Needs*
 - *What are their critical needs and how well are these being met at present?*
 - *Who are the consumers, what products do they use, how do they use products, and under what conditions are the products used?*
 - *How are current market products received and perceived with respect to meeting their needs?*
 - *How do consumers know that a product is working, what signals convey that a product is working?*

Stages of the Product Development

- *Developing Product development plan*
 - *Understanding Consumers and Their Needs*
 - *What are their critical needs and how well are these being met at present?*
 - *Who are the consumers, what products do they use, how do they use products, and under what conditions are the products used?*
 - *Market research techniques help in understanding consumer needs.*
 - *Qualitative*
 - *Focus group interviews,*
 - *One-on-one or in-depth interviews, and*
 - *In-home visits*
 - *Quantitative*
 - *Brand image research,*
 - *Segmentation research, and*
 - *Conjoint analysis*

Stages of the Product Development

- *Developing Product development plan*
 - *Understanding Consumers and Their Needs*
 - *How are current market products received and perceived with respect to meeting their needs?*
 - *The market understanding should clarify how the product will benefit both the consumer and the company and should focus on the following factors:*
 - *Market fit with the overall mission of the company.*
 - *Synergy between the market and the company.*
 - *Attractiveness of the market.*

Stages of the Product Development

- *Developing Product development plan*
 - *Understanding Consumers and Their Needs*
 - *How do consumers know that a product is working, what signals convey that a product is working?*
 - *Performance: primary operating characteristics of the product.*
 - *Features: characteristics of the product.*
 - *Reliability: mean time between failures.*
 - *Durability: product life estimate.*
 - *Serviceability: ease of repair, part replacement, maintenance.*
 - *Aesthetics: look, feel, sound.*
 - *Packaging: packaging requirements, labeling, handling.*
 - *Perceived quality: subjective reputation of the product.*
 - *Cost: manufacturing, servicing.*