

CIM (21-548)

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

Session # 16



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*

▪ *Class time*

- *Sunday-Tuesday 09:00-10:30*

▪ *Course evaluation*

- *Mid-term (30%)*
- *Final exam (50%)*
- *Quiz (5%)*
- *Exercise (15%)*

Course Description (Continued ...)

- **Mid-term session:**
 - Sunday: 16th Azar 1393, 09:00 ~ 10:30
- **Final Exam:**
 - Tuesday: 30th Dey 1393, 15:00 ~ 17:30
- **Reference:**
 - Schaefer, D., *Cloud-based Design and Manufacturing (CBDM): A Service-Oriented Product Development Paradigm for the 21st Century*, . London: Springer, 2014
 - Koren, Y., *"The Global Manufacturing Revolution"*, Wiley, 2010
 - Nasr, A., *"Computer-Based Design and Manufacturing An Information-Based Approach"*, Springer, 2007
 - Mitchell, F.H., *"CIM Systems: An Introduction to Computer-Integrated Manufacturing"*, Prentice Hall College Div; 1St Edition edition (January 1991), ISBN: 978-0131332997

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Course Description (Continued..)

- **Contents:**
 - Globalization and Manufacturing Paradigms (8 sessions)
 - System Concepts (3 sessions)
 - Evolution of Manufacturing systems (2 sessions)
 - Manufacturing System Design (4 sessions)
 - Manufacturing Equipment Design (3 sessions)
 - Information flow in Manufacturing Systems (4 sessions)
 - Product design and Manufacturing System (3 sessions)
 - Manufacturing System Implementation (5 sessions)

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Course Description (Continued..)

▪ **Contents:**

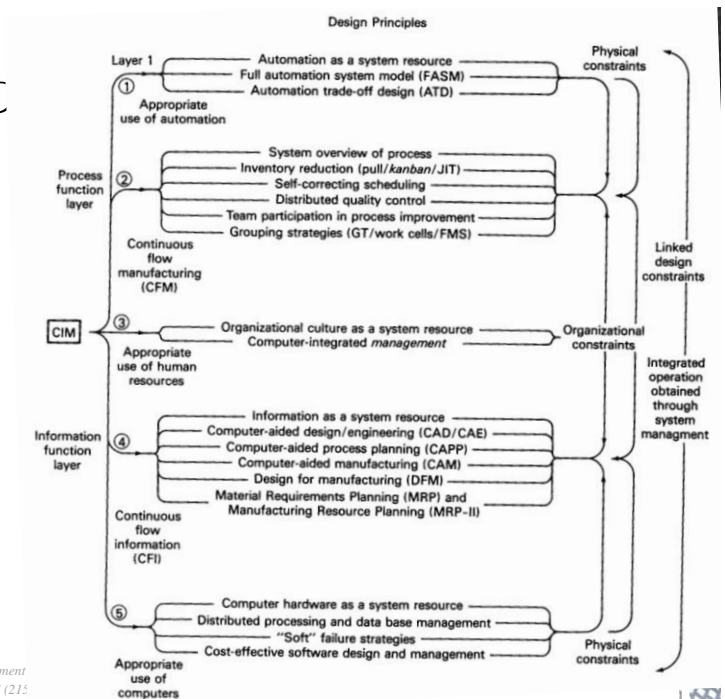
- *Manufacturing Equipment Design*
 - *Equipment unit parameters*

- *Range of equipment technologies and automation available*

- *Technology assessment*

(3 sessions)

Manufacturing System I



Manufacturing Equipment Design

- *We have provided the conceptual foundation for a system-oriented approach to the design and implementation of computer-integrated manufacturing (CIM) systems.*
- *Optimizing planning cannot be used in such a context; rather, a search and learn procedure must be established.*
- *As a result of the system design process, the manufacturing setting passes through a series of robust transition stages as it evolves into a more competitive enterprise.*
- *The task of the planning group is to guide this overall evolutionary process by producing estimates of desirable to-be system concepts and by defining viable transition stages that can lead in the general direction that has been established.*
- *As noted in the earlier chapters, it should be understood that the target to-be system is constantly in a state of change, so that each transition step can become a new starting point for system development.*

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Manufacturing Equipment Design

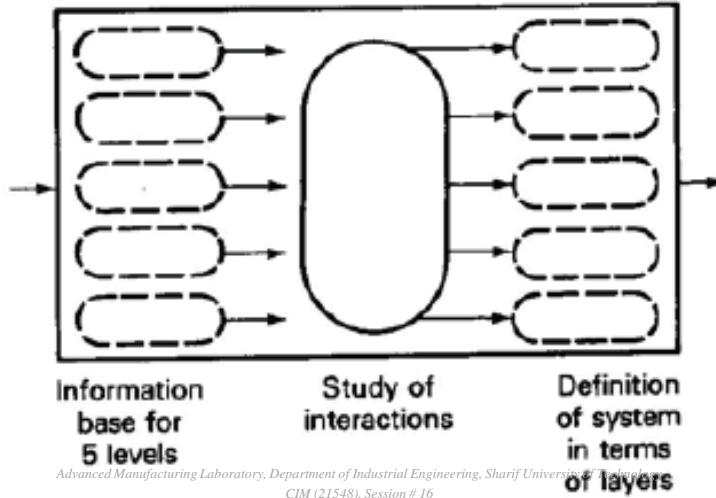
- *The objective here is to apply the conceptual foundation developed in earlier chapters to the creation of an operational approach for the planning and design of computer-integrated manufacturing systems.*
- *The approach taken is to develop a step-by-step method that can guide the design process in general.*

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Manufacturing Equipment Design

Design process using
5-layer model representation

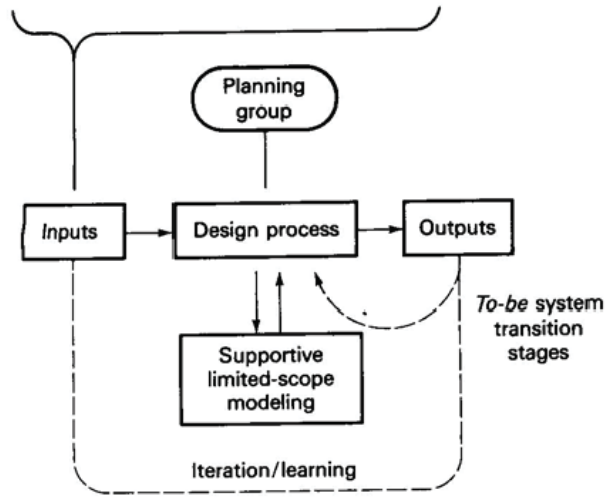


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Manufacturing Equipment Design

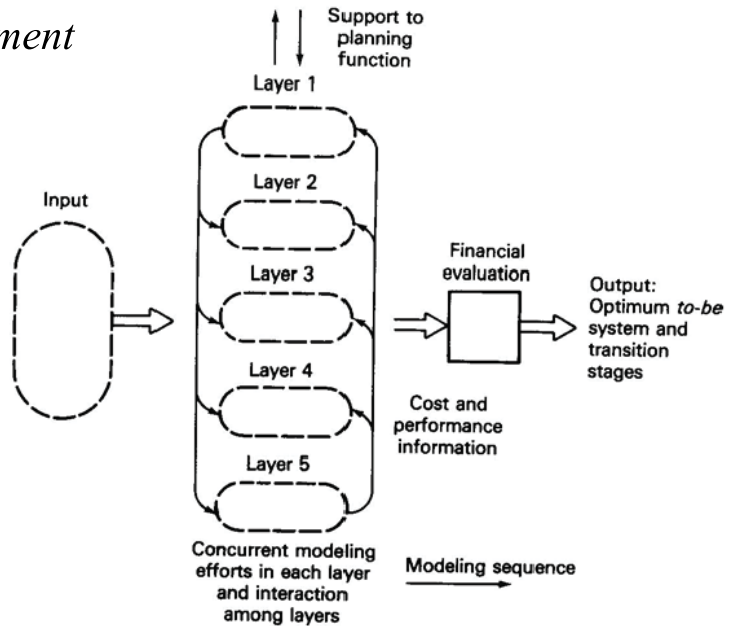
- Enterprise objectives
- Environment
- CIM design principles and reference systems
- As-is system
- Learning strategy



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Manufacturing Equipment Design

Concurrent Modeling

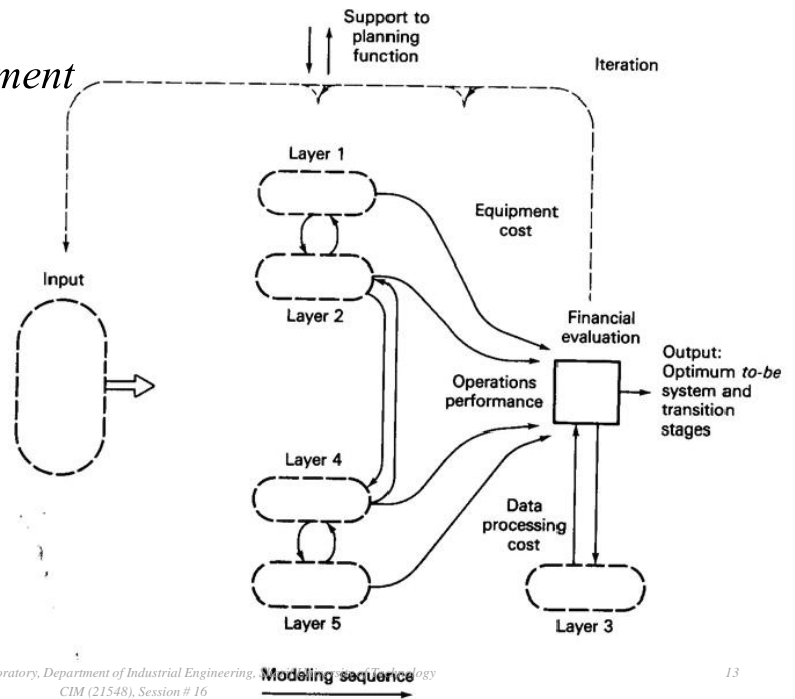


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Manufacturing Equipment Design

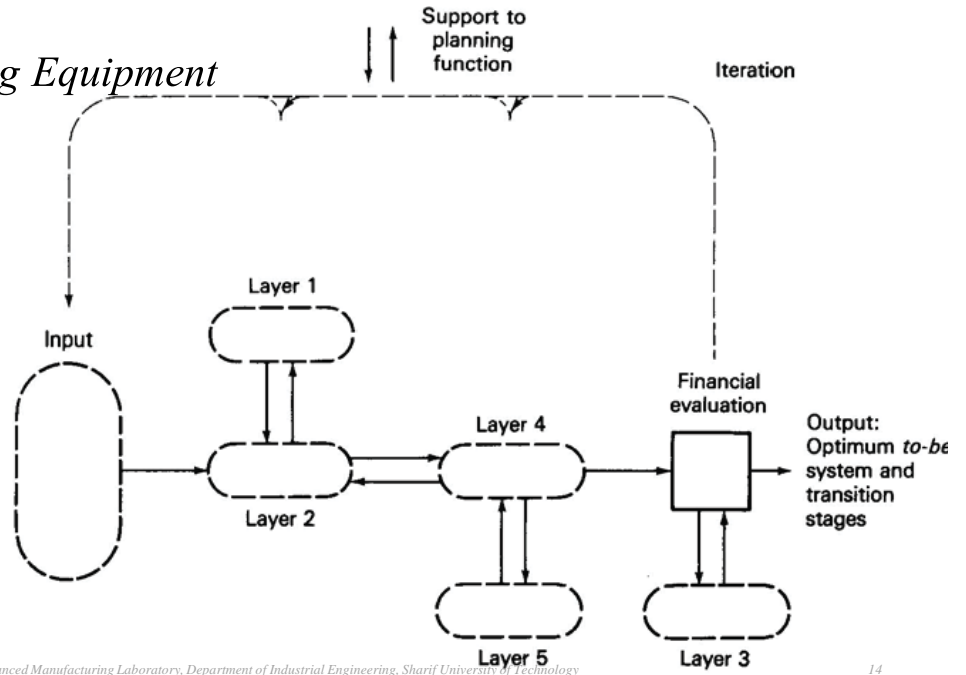
Independent Modeling



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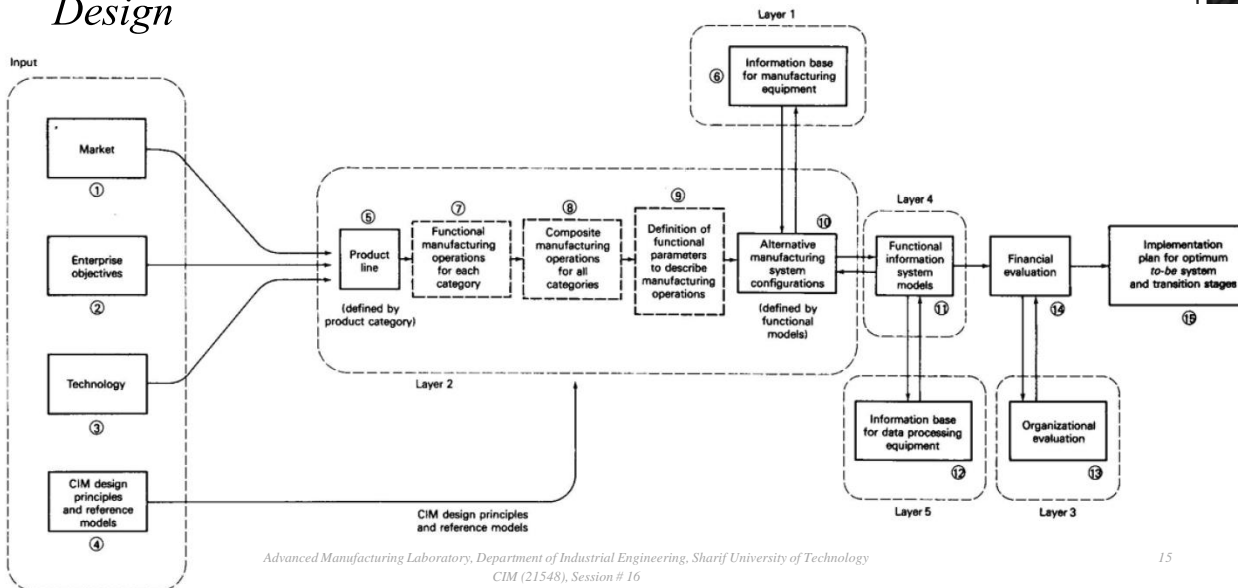
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Manufacturing Equipment Design



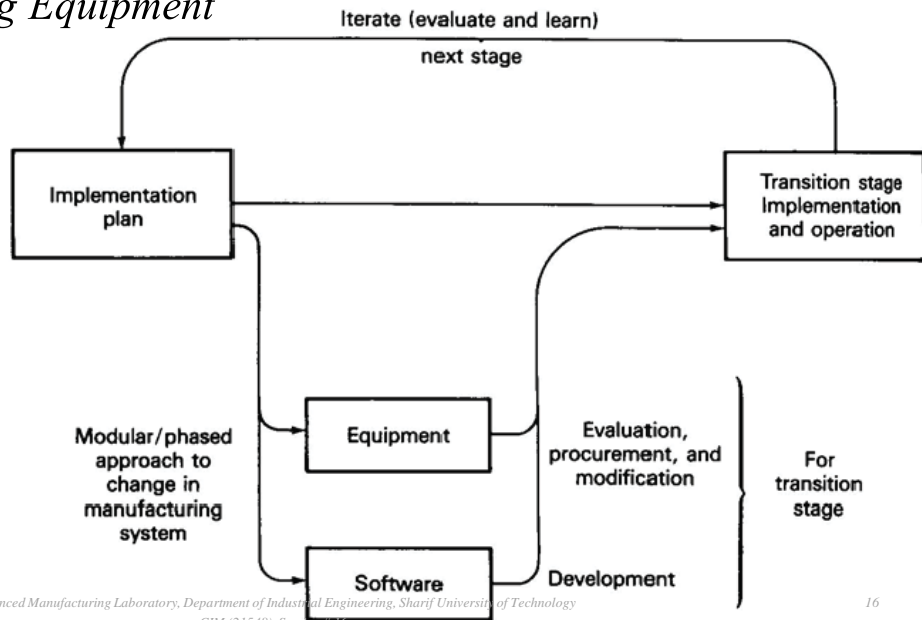
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