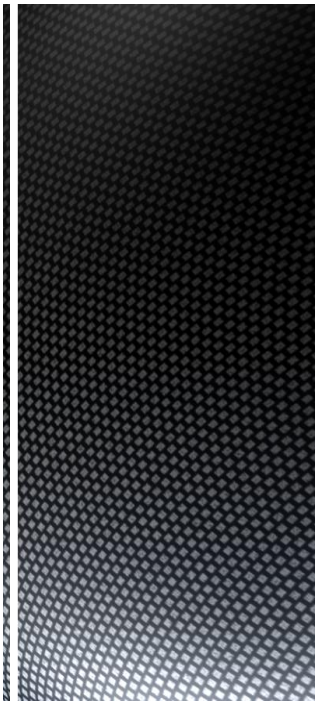

# *CIM (21-548)*

*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 , 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*




# *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)*

# *Course Description* *(Continued..)*

- *Contents:*
  - *Globalization and Manufacturing Paradigms* *(8 sessions)*
    - *The Importance of Manufacturing to Society*
    - *The Basics of Manufacturing in Large Quantities*
    - *The 1990s: A Decade of Intensified Globalization*
    - *The Global Manufacturing Revolution*
    - *The Manufacturing Paradigm Model*
    - *Four Major Manufacturing Paradigms*



# *Course Description* *(Continued..)*

- *Contents:*
  - *System Concepts* *(3 sessions)*
    - *Open System Concepts*
    - *Application to the manufacturing systems*
    - *Developing models of manufacturing systems*

# *Course Description* *(Continued..)*

- *Contents:*
  - *Evolution of Manufacturing systems* *(2 sessions)*
    - *Applying open system theory to manufacturing systems*
    - *Case studies*



# *Course Description* *(Continued..)*

- *Contents:*
  - *Manufacturing System Design* *(4 sessions)*
    - *Problem definition*
    - *Computer Integrated Manufacturing*
    - *Design principles*
    - *A multi-layer model for study of design principles*
    - *Implementing system design concept*

# *Course Description* *(Continued..)*

- *Contents:*
  - *Manufacturing Equipment Design* *(3 sessions)*
    - *Equipment unit parameters*
    - *Range of equipment technologies and automation available*
    - *Technology assessment*



# *Course Description* *(Continued..)*

- *Contents:*
  - *Information flow in Manufacturing Systems* *(4 sessions)*
    - *Evolution of computer hardware*
    - *The open system interconnect model for computer communication*
    - *A strategy for comparing alternative approach to computer communications*
    - *Manufacturing Automation Protocol (MAP)*

# *Course Description* *(Continued..)*

- *Contents:*
  - *Product design and Manufacturing System* *(3sessions)*
    - *Introduction to Computer-Aided Design and Manufacturing*
    - *Design for Assembly and Manufacturing*
    - *Computer Communication for CAD integration*



# *Course Description* *(Continued..)*

- *Contents:*
  - *Manufacturing System Implementation* *(5 sessions)*
    - *State-of-the-Art Technology*
    - *CIM design principles and reference models*
    - *Product definition in terms of manufacturing operations*
    - *Composite manufacturing functions for the entire product line*
    - *Functional Process Model*
    - *Functional Information Model*