

CAD/CAM (21-342)

*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*

▪ *Class time*

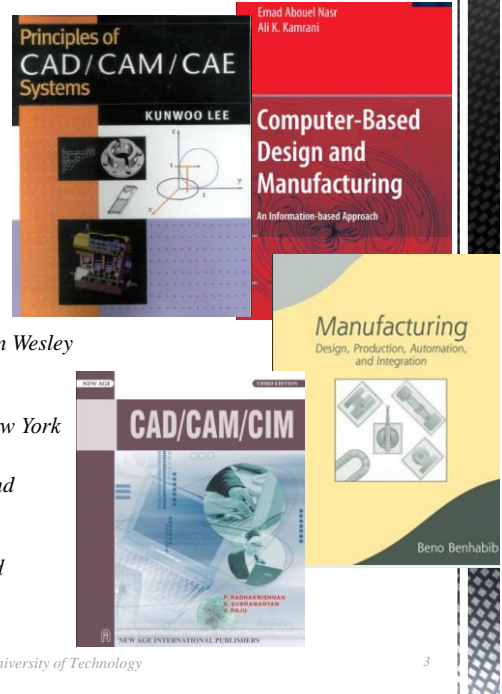
- *Saturday- Monday 10:30-12:00*

▪ *Course evaluation*

- *Mid-term (25%)*
- *Final exam (40%)*
- *Quiz (5%)*
- *Exercise (30%)*

Course Description (Continued ...)

- **Mid-term session:**
 - Monday: 8th Ordibehesht 1393, 10:30 ~ 12:30
- **Final Exam:**
 - Saturday: 24th Khordad 1393, 15:00 ~ 17:30
- **Reference:**
 - Lee, Kunwoo; "Principles of CAD/CAM/CAE systems", 1999, Addison Wesley
 - Abouel Nasr, Emad; Kamrani, Ali K.; "Computer-Based Design and Manufacturing: An Information-Based Approach", 2007, Springer, New York
 - Benhabib, Beno; "Manufacturing: Design, Production, Automation, and Integration", 2003, Marcel Dekker Inc, New York
 - Radhakrishnan, P.; Subramanian, S.; Raju, V.; "CAD/CAM/CIM", 3rd edition, 2005, New age international (P) limited publishers, New York



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Course Description (Continued..)

- **Contents:**
 - Introduction to CAD/CAM/CAE systems (5 sessions)
 - Components of CAD/CAM/CAE systems (2 sessions)
 - Geometric modeling systems (3 sessions)
 - Optimization in CAD (5 sessions)
 - Rapid prototyping and manufacturing (3 sessions)
 - Virtual engineering (2 sessions)
 - Product Life Cycle Cost Model (2 sessions)
 - Computer-Based Design and Features/Methodologies of Feature Representations (5 sessions)
 - Feature-Based Process Planning and Techniques (3 sessions)
 - Collaborative Engineering (2 sessions)

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Introduction to CAD/CAM/CAE systems

- *Definition of CAD/CAM/CAE*
 - *CAD is the technology concerned with use of computer systems to assist in*
 - *Creation*
 - *Modification*
 - *Analysis and*
 - *Optimization*
 - Of design*
- *The most basic role of CAD is to define the geometry of design including*
 - *A Mechanical part*
 - *Architectural structure*
 - *Electronic circuit*
 - *Building layout*

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Introduction to CAD/CAM/CAE systems

- *Definition of CAD/CAM/CAE*
 - *CAM is the technology concerned with use of computer systems to*
 - *Plan*
 - *Manage and*
 - *Control the manufacturing operations*
 - Through either direct or indirect computer interface with plant's production resources*
- *One of the most important areas of CAM is concerned with numerical control (NC)*
- *Another significant CAM function is the programming of robots*
- *Process Planning is also a target of computer automation including:*
 - *Detailed sequence of production steps required to fabricate an assembly*

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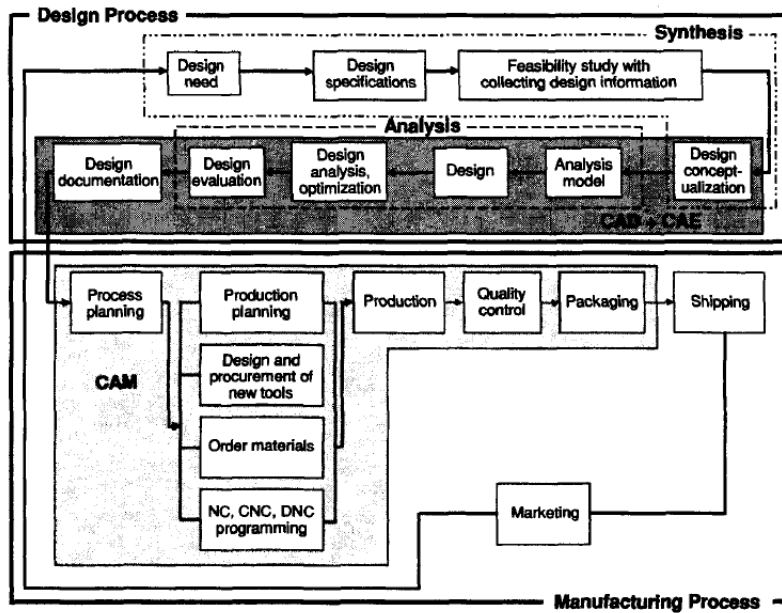
Introduction to CAD/CAM/CAE systems

- *Definition of CAD/CAM/CAE*
 - *CAE is the technology concerned with use of computer systems to*
 - *Analyze the CAD geometry*
 - Allowing the designer to simulate and study*
 - how the product will behave so that the design can be refined and optimized*

Introduction to CAD/CAM/CAE systems

- *Definition of CAD/CAM/CAE*
 - *CAD/CAM/CAE are concerned with automating specific functions of the product lifecycle and making them more efficient*

Introduction to CAD/CAM/CAE systems



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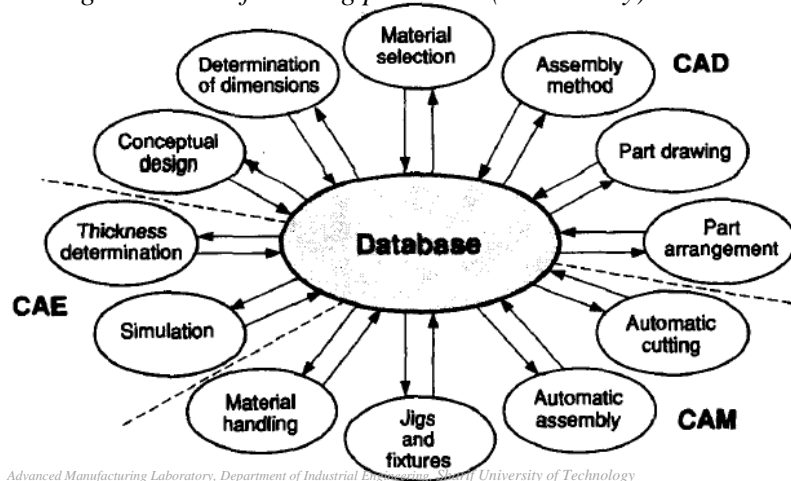
Introduction to CAD/CAM/CAE systems

- *Definition of CAD/CAM/CAE*
 - *CIM is aimed tying the separate “Island of automation” together to into a smoothly running efficient system*
 - *CIM is often said to be more of a business philosophy than a computer system*

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Introduction to CAD/CAM/CAE systems

- Integrating the Design and manufacturing processes (Case study)



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