

CAD/CAM (21-342)

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

Session # 4



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*

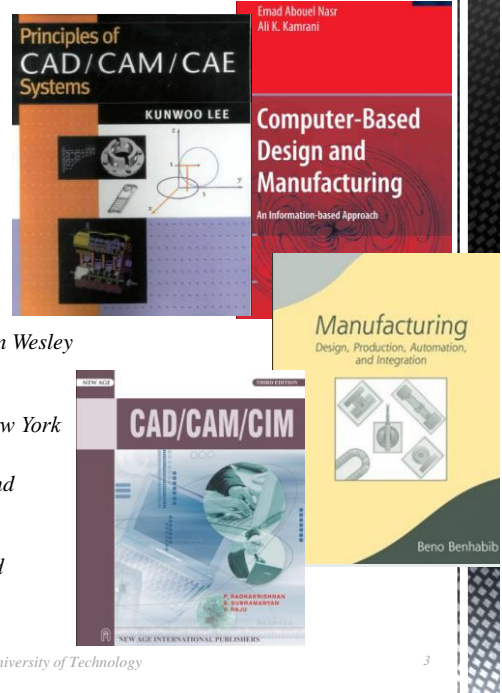
- *Saturday- Monday 10:30-12:00*

▪ *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, CAD/CAM, 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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Course Description (Continued..)

▪ Contents:

▪ Components of CAD/CAM/CAE systems

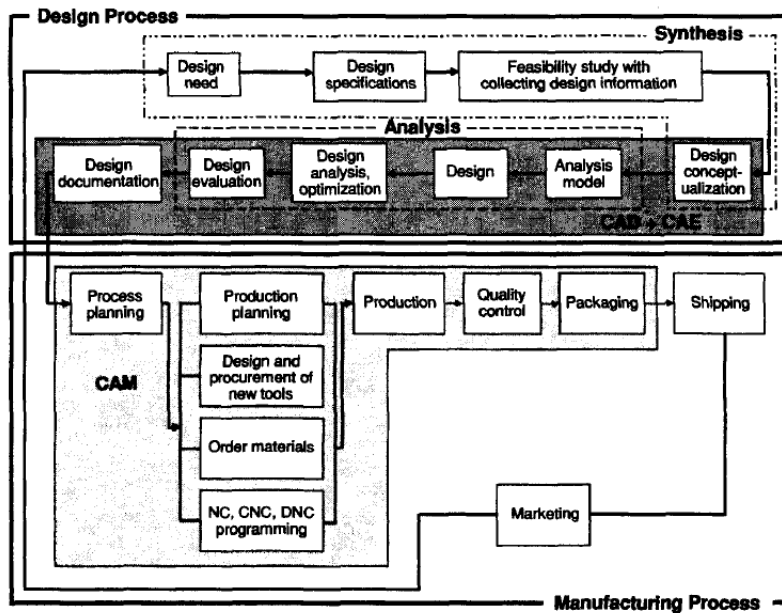
(2 sessions)

- Hardware components
- Hardware configurations
- Software components
- CAD/CAM systems

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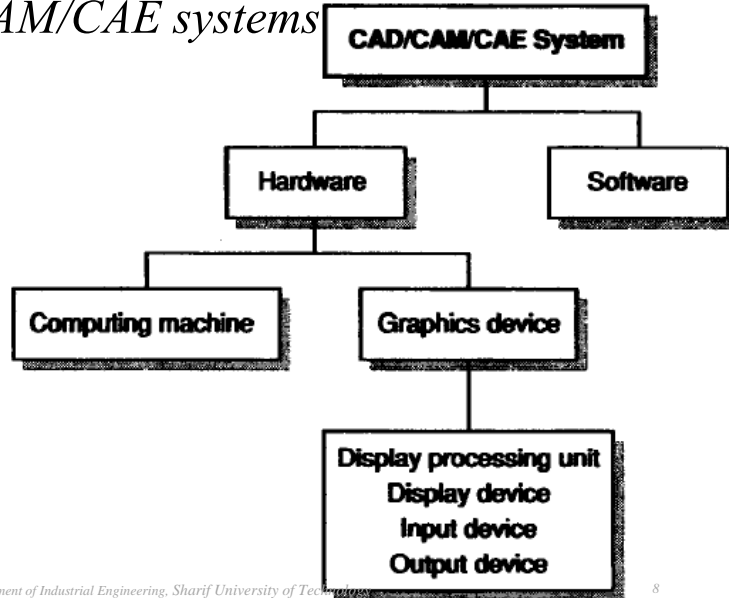
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Introduction to CAD/CAM/CAE systems



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Components of CAD/CAM/CAE systems



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Components of CAD/CAM/CAE systems

▪ Software components

Application Area	Software	Integrated System
CAD—2D drafting	CADAM, AutoCAD, MicroCADAM, VersaCAD	Pro/ENGINEER Unigraphics
CAD—Solid modeling	Solid Edge, SolidWorks, SolidDesigner, Mechanical Desktop	CATIA I-DEAS
CAM	BravoNCG, VERICUT, DUCT, Camand, Mastercam, PowerMILL	I/EMS EUCLID-IS
CAE	MSC/NASTRAN, ANSYS, PATRAN, DADS, ADAMS, C-MOLD, MOLDFLOW, DesignWorks	

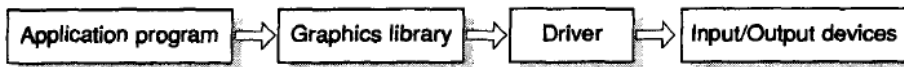
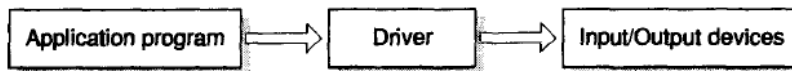
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Components of CAD/CAM/CAE systems

- *Basic concepts of a graphic programming system*
 - *Graphics programming*
 - *The activity that includes graphics as input and output*
 - *Computer graphics*
- *Graphic software may be used for graphic programming*
 - *Device drivers*
 - *A set of machine-dependent codes that directly controls the display processing unit of a graphic device*
 - *Graphic libraries*
 - *A set of subroutines each with a specific graphic purpose*

Components of CAD/CAM/CAE systems

- *Basic concepts of a graphic programming system*



Components of CAD/CAM/CAE systems

- Basic concepts of a graphic programming system
 - Coordinate systems
 - Two basic tasks required to display an image of an object on a graphics device
 - Specifying the location of all the points on the object in space
 - Determining which locations on the display
 - Device coordinate system
 - Virtual device coordinate system

