Course Description

- **Instructor**
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- **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:**
  - Benhabib, Beno; “Manufacturing: Design, Production, CAD/CAM, and Integration”, 2003, Marcel Dekker Inc, New York

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)
Course Description (Continued..)

- Contents:
  - Introduction to CAD/CAM/CAE systems (5 sessions)
  - Definition of CAD/CAM/CAE
  - Integrating the Design and manufacturing processes (Case study)
  - Using CAD/CAM for product development (a practical example)

Introduction to CAD/CAM/CAE systems
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

- **Definition of 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
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

- 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

- **Definition of CAD/CAM/CAE**
  - CIM is aimed at 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
Introduction to CAD/CAM/CAE systems

* Integrating the Design and manufacturing processes (Case study)