MIS
(Management Information System)
(21-972)

Department of Industrial Engineering
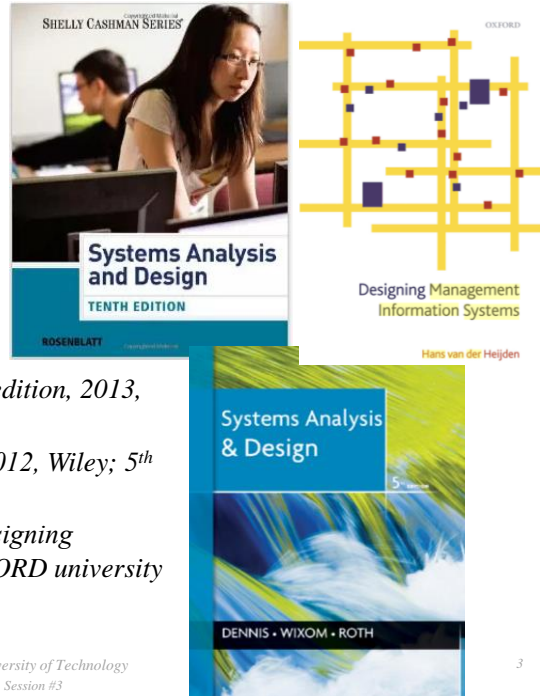
Sharif University of Technology

Session #3

Course Description

- *Instructor*
  - *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
  - *Email: Fvalilai@sharif.edu , Tel: 021-6616-5706*
  - *Website: http://sharif.edu/~fvalilai*
- *Class time*
  - *Saturday-Monday   10:30~12:00*
- *Course evaluation*
  - *Mid-term   (20%)*
  - *Final exam   (20%)*
  - *Quiz   (10%)*
  - *Exercise-Projects   (30%)*

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Course Description *(Continued ...)*

- *Mid-term session:*
  - *Saturday, 7th, Azar 1394*
- *Final session:*
  - *Monday, 28th, Dey 1394*
- *Reference:*
  - *Rosenbalt, "System Analysis and Design", 10th edition, 2013, Course Technology*
  - *Dennis, Lan; "Systems Analysis and Design", 2012, Wiley; 5th edition*
  - *Johannes Govardus Maria van der Heijde; "Designing Management Information Systems", 2009, OXFORD university press*
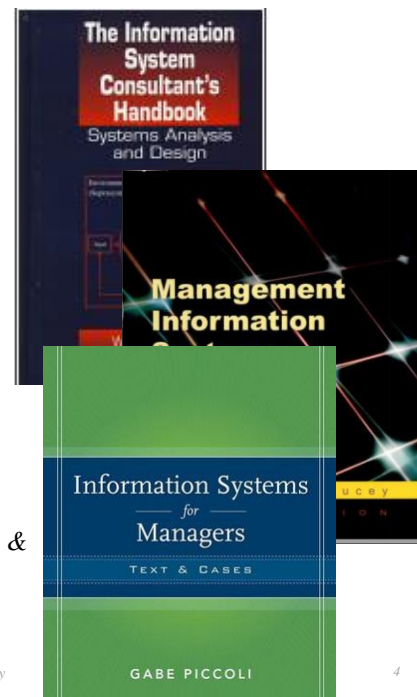
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Course Description *(Continued ...)*

- *Reference:*
  - *William S. Davis, David C. Yen, "The information system consultant's handbook: system analysis and design", 2010, Taylor and Francis*
  - *Terence Lucey; "Management Information Systems", 2004, Cengage Learning EMEA*
  - *Gabriele Piccoli; "Information systems for managers: texts & cases ", 2007, John Wiley & Sons Inc*

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Course Description *(Continued..)*

- *Contents:*
  - *Introduction to Systems Analysis and Design*
  - *Analyzing the Business Case*
  - *Managing Systems Projects*
  - *Requirements Modeling*
  - *Data and Process Modeling*
  - *Object Modeling*
  - *Development Strategies*
  - *User Interface Design*
  - *Data Design*
  - *System Architecture*
  - *Managing Systems Implementation*

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Course Description *(Continued..)*

- *Contents:*
  - *Introduction to Systems Analysis and Design*
    - *What Is Information Technology?*
    - *Information System Components*
    - *Business in the 21st Century*
    - *Modeling Business Operations*
    - *Business Information Systems*
    - *Systems Development Tools*
    - *Systems Development Methods*
    - *The Information Technology Department*
    - *The system analyst*

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System Analysis & Design

- *Contents:*
  - *Modeling Business Operations*
    - *Systems analysts use modeling to represent company operations and information needs.*

    - *Business process modeling involves a business profile and a set of models that document business operations.*
    - ***Business Profiles***
    - *A business profile is an overview of a company's mission, functions, organization, products, services, customers, suppliers, competitors, constraints, and future direction.*
    - *Although much of this information is readily available, a systems analyst usually needs to do additional research and fact-finding.*
    - *A business profile is the starting point for the modeling process.*

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System Analysis & Design

- *Contents:*
  - *Modeling Business Operations*
    - *Systems analysts use modeling to represent company operations and information needs.*

    - ***Business Processes***
    - *A business process is a specific set of transactions, events, and results that can be described and documented.*

    - *A business process model (BPM) graphically displays one or more business processes*
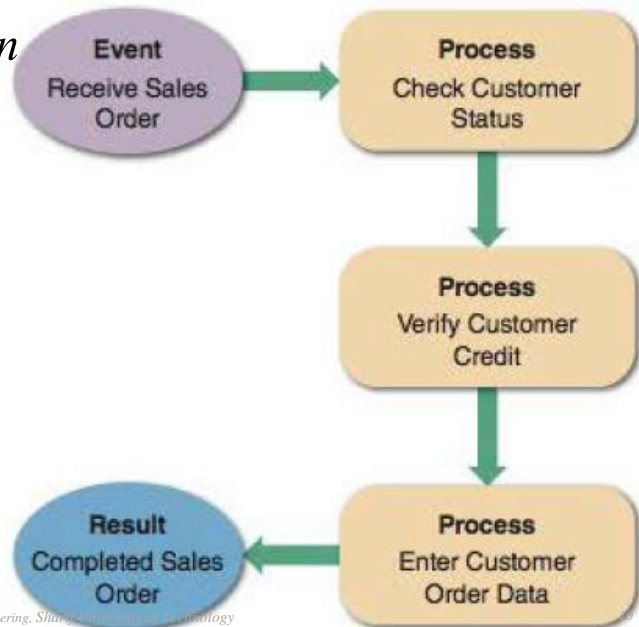
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System Analysis & Design

- *Contents:*
  - *Modeling Business Operations*

Event Receive Sales Order	→	**Process** Check Customer Status
		↓
		Process Verify Customer Credit
Result Completed Sales Order	←	**Process** Enter Customer Order Data

System Analysis & Design

- *Contents:*
  - *Business Information Systems*
    - *As business changes, information use also changes, and now it makes more sense to identify a system by its functions and features, rather than by its users.*

    - *A new set of system definitions includes*
      - *Enterprise computing systems,*
      - *Transaction processing systems,*
      - *Business support systems,*
      - *Knowledge management systems, and*
      - *User productivity systems.*

      - *Systems Integration*

System Analysis & Design

- *Contents:*
  - *Systems Development Tools*
    - *In addition to understanding business operations, systems analysts must know how to use a variety of techniques, such as*
      - *Modeling,*
      - *Prototyping, and*
      - *computer-aided systems engineering tools*
    - *to plan, design, and implement information systems.*

    - *Systems analysts work with these tools in a team environment, where input from users, managers, and IT staff contributes to the system design*

System Analysis & Design

- *Contents:*
  - *Systems Development Tools*
    - ***Modeling***
    - *Modeling produces a graphical representation of a concept or process that systems developers can analyze, test, and modify.*

    - *A systems analyst can describe and simplify an information system by using a set of business, data, object, network, and process models.*

    - *A business model describes the information that a system must provide.*

System Analysis & Design

- *Contents:*
  - *Systems Development Methods*
    - *Many options exist for developing information systems, but the most popular alternatives are*
      - *Structured analysis,*
      - *Object-oriented (0-0) analysis,*
      - *Agile methods, (adaptive methods)*

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	STRUCTURED ANALYSIS	OBJECT-ORIENTED ANALYSIS	AGILE/ADAPTIVE METHODS
Description	Represents the system in terms of data and the processes that act upon that data. System development is organized into phases, with deliverables and milestones to measure progress. The waterfall model typically consists of five phases. Iteration is possible among the phases, as shown in Figure 1-25 on page 23.	Views the system in terms of objects that combine data and processes. The objects represent actual people, things, transactions, and events, as shown in Figure 1-26. Compared to structured analysis, O-O phases tend to be more interactive. Can use the waterfall model or the model that stresses greater iteration, as shown in Figure 1-27 on page 25.	Stresses intense team-based effort, as shown in Figure 1-28. Breaks development into cycles, or iterations that add functionality. Each cycle is designed, built, and tested in an ongoing process. Attempts to reduce major risks by incremental steps in short time intervals.
Modeling tools	Data flow diagrams (DFDs) and process descriptions, which are described in Chapter 5. Also, business process modeling, which is explained in Part B of the Systems Analyst's Toolkit.	Various object-oriented diagrams depict system actors, methods, and messages, which are described in Chapter 6. Also, business process modeling, which is explained in Part B of the Systems Analyst's Toolkit.	Tools that enhance communication, such as collaborative software, brainstorming, and whiteboards. Business process modeling, which is explained in Part B of the Systems Analyst's Toolkit, works well with agile methods.

	STRUCTURED ANALYSIS	OBJECT-ORIENTED ANALYSIS	AGILE/ADAPTIVE METHODS
Pros	Traditional method, which has been very popular over time. Relies heavily on written documentation. Frequent phase iteration can provide flexibility comparable with other methods. Well-suited to project management tools and techniques.	Integrates easily with object-oriented programming languages. Code is modular and reusable, which can reduce cost and development time. Easy to maintain and expand because new objects can be cloned using inherited properties.	Very flexible and efficient in dealing with change. Stresses team interaction and reflects a set of community-based values. Frequent deliverables constantly validate the project and reduce risk.
Cons	Changes can be costly, especially in later phases. Requirements are defined early, and can change during development. Users might not be able to describe their needs until they can see examples of features and functions.	Somewhat newer method might be less familiar to development team members. Interaction of objects and classes can be complex in larger systems.	Team members need a high level of technical and communications skills. Lack of structure and documentation can introduce risk factors. Overall project might be subject to scope change as user requirements change.

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