MMIS
(Manufacturing Management Information System)

Department of Industrial Engineering
Sharif University of Technology

Session# 1

Course Description

- Instructor
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- Class time
  - Saturday 15:30~18:00

- Course evaluation
  - Mid-term (30%)
  - Final exam (40%)
  - Quiz (10%)
  - Exercise (20%)
Course Description (Continued ...)

- Mid-term session:
  - N/A
- Final session:
  - N/A
- Reference:
  - Steve Bell; “Lean Enterprise Systems: Using IT for Continuous Improvement”, 2005, Wiley

Course Description (Continued ...)

- Reference:
  - William S. Davis, David C. Yen, “The information system consultant’s handbook: system analysis and design”, 2010, Taylor and Francis
  - Gabriele Piccoli; “Information systems for managers: texts & cases “, 2007, John Wiley & Sons Inc
Foundation of Information Systems (IS)

- Data & Information:
  - Data is a raw fact and can take the form of a number or statement such as date or a measurement.
  - Information is the data which have been processed so that they are meaningful.
  - Information needs the process(es) which collect(s) data and subject them to transformation process.

Foundation of Information Systems (IS)

- Information system (IS):
  - is a set of hardware, software, data, human, and procedural components intended to provide the right data and information to the right person at the right time.
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- Information system (IS):
  - Of the most important role of the Information systems is to provide information for management

- This management enables decision making process which ensure that the organization is controlled

- The organization will be in control if it is meeting the needs of the environment
* Information systems may be divided into two categories of systems:
  * The Ones that support an organization’s day-to-day business activities
  * Systems that support managerial decision making.
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- Types of Information Systems (IS):
  - Transaction Processing System (TPS) or Operations Information Systems (OIS)
  - Management Information Systems (MIS)
  - Decision Support System (DSS)
    - Group Decision Support System (GDSS)
    - Executive Support Systems (ESS) or Executive Information System (EIS)

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- Transaction Processing System (TPS) or Operations Information Systems (OIS)

  - TPSs support the routine, day-to-day activities that occur in the normal course of business.
  - TPSs often perform activities related to customer contacts – like order processing and invoicing.
  - The primary objective of any TPS is to capture, process, and store transactions and to produce a variety of documents related to routine business activities.
  - One objective of any TPS is error-free data input and processing.
Management Information Systems (MIS)

Management information systems (MIS) can often give firms a competitive advantage by providing the right information to the right people in the right format and at the correct time.

The primary purpose of an MIS is to help an organization achieve its goals by providing managers with insight into the regular operations of the organization so that they can
- Control,
- Organize, and
- Plan
more effectively and efficiently.

MIS provides managers with information, typically in reports, that support effective decision making and provides feedback on daily operations.

Management Information Systems (MIS) perform the following functions:

- Provide reports with fixed and standard formats (hard-copy and soft-copy reports)
- Use internal data stored in the computer system. MIS reports use primarily internal sources of data that are contained in computerized databases.
- Allow end users to develop their own custom reports
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- Management Information Systems (MIS) are used in processes like:
  - Financial Management Information Systems
  - Manufacturing Management Information Systems
  - Marketing Management Information Systems
  - Human resource Management Information Systems

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- Decision Support System (DSS):
  - Decision support systems offer the potential to generate higher profits, lower costs, and better products and services.
  - today’s managers at all levels are faced with less structured, non routine problems, but the quantity and magnitude of these decisions increase as a manager rises higher in an organization.
  - A DSS gives the decision maker a great deal of flexibility in computer support for decision making.
    - What-if analysis
    - Goal-seeking analysis
    - Simulation
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- **Decision Support System (DSS):**
  - **Group Decision Support Systems (GDSS)**
    - A group decision support system (GDSS), also called group support system and computerized collaborative work system, consists of most of the elements in a DSS, plus GDSS software needed to provide effective support in group decision-making settings.
    - Many GDSSs allow anonymous input, where the person giving the input is not known to other group members.
    - One key characteristic of any GDSS is the ability to suppress or eliminate group behavior that is counterproductive or harmful to effective decision making.
    - GDSS software, often called groupware or workgroup software helps with joint work group scheduling, communication, and management.

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- **Decision Support System (DSS):**
  - **Executive Support System (ESS) or Executive Information System (EIS)**
    - ESS is a specialized DSS that includes all hardware, software, data, procedures, and people used to assist senior-level executives within the organization.
    - ESSs give top executives a means of tracking critical success factors.
    - ESSs are typically tailored to individual executives; DSSs are not tailored to particular users.
    - An ESS allows executives to drill down into the company to determine how certain data was produced.
    - ESSs also support strategic planning. Strategic planning involves determining long-term objectives by analyzing the strengths and weaknesses of the organization, predicting future trends, and projecting the development of new product lines.
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- Hardware:
  - Hardware describes the physical components of a computer system which can be categorized as input devices, a central processing unit, internal and external memory and output devices.
  - Input devices are used to capture or enter data into the computer.
  - The central processing unit (CPU) performs processing by carrying out instructions given in the form of computer programs.
  - Internal memory is used as a temporary means of storage data and instructions while external memory provides a means of storing data and programs outside of the computer. Output devices translate the results of processing into a human-readable form.

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- Software:
  - Software can be defined as a series of detailed instructions that control the operation of a computer system and exists as programs which are developed by computer programmers.
  - Systems software: Systems software manages and controls the operation of the computer system as it performs tasks on behalf of the user. Systems software consists of three basic categories:
    - Operating systems,
    - Software development programs and
    - Utility programs.
  - Application software: Application software can be defined as a set of programs that enable users to perform specific information-processing activities. Application software can be divided into two broad categories:
    - General-purpose and
    - Application-specific.
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- Database Systems:
  - A database is a collection of related files.
  - Databases can exist on paper, for example a telephone directory.
  - A computer-based database offers the advantage of powerful search facilities which can be used to locate and retrieve information.
  - An electronic database provides facilities for users to add, amend or delete records as required.
  - Indexing features mean that the same basic information can be stored under a number of different categories. This provides great flexibility and allows users to locate, retrieve and organize information as needed.

Database Systems:
- The data in an electronic database is organized by fields and records.
- A field is a single item of information, such as a name or a quantity.
- A record is a collection of related fields and a table is a collection of related records.

Database Software
- The majority of database programs support the creation of relational databases containing several linked tables.
- When using database software data is retrieved from a database using what is called a query.
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- **Database Software**
  - The majority of database programs make use of a special structured query language (SQL) in order to create queries.
  - Structured query language (SQL) provides a standardized method for retrieving information from databases.
  - SQL programs are created by producing a series of statements containing special key words.

- **Networks:**
  - A network is a combination of devices connected to each other through communication links to provide the channels for information to flow continuously between people.
  - Networks are important to an organization because they help a business connect with its customers, suppliers, and collaborators.

- **Network components:**
  - **Servers**
  - **End-user computers or terminals**
  - **Telecommunications processors**
  - **Middleware**
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**E-business:**
- E-business involves several key activities including improving business processes, enhancing communications and providing the means to carry out business transactions securely.
- E-business is part of a broader Internet economy which encompasses all of the activities involved in using the Internet for commerce.

**The Internet economy is made up of the following layers:**
- Internet Infrastructure
- Internet Applications Infrastructure
- Internet Intermediaries
- Internet Commerce

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**E-Commerce:**
- E-Commerce can be described as using technology to conduct business transactions, such as buying and selling goods and services.
- E-Commerce encompasses a wide range of associated activities, such as after-sales support and even logistics.

**E-commerce activities can be broken down into five basic types:**
- B2B
- B2C
- B2G
- C2C
- M-Commerce