

**CUYAMACA COLLEGE**  
COURSE OUTLINE OF RECORD

**COMPUTER AND INFORMATION SCIENCE 110 – PRINCIPLES OF INFORMATION SYSTEMS**

3 hours lecture, 3 hours laboratory, 4 units

**Catalog Description**

An introductory course in information technology with an emphasis on business and business-related applications. Concepts include computer organization, data processing systems, decision support systems, systems analysis and design. The laboratory component consists of hands-on problem solving using software applications including spreadsheets and databases.

**Prerequisite**

None

**Course Content**

- 1) Computer Information Systems Concepts:
  - a. Components of an information system used for input, process, output, storage
  - b. Different sizes/types of computers and how they are used as part of information systems
  - c. Data representation within a computer
  - d. The use of networking, data communication and the Internet in the business environment
  - e. Systems analysis methods and implementation of information technology as business solutions
- 2) Characteristics of the Information Technology Industry:
  - a. Social implications of using computers
  - b. Jobs employment opportunities typically found within an information technology industry
  - c. Ethics issues including security, copyright, privacy and piracy
- 3) Computer Software Concepts:
  - a. Identify the proper software tools for developing business solutions
  - b. Spreadsheet commands, tables, reports and charts
  - c. Database structures, files, tables, fields, queries and reports
  - d. Systems and applications software concepts
  - e. Functions of an operating system
- 4) Application Software:
  - a. Spreadsheet software:
    1. Spreadsheets, formatting, charts and pivot tables
    2. Formulas, functions macros
    3. Import and export data
  - b. Database software:
    1. Database design principles
    2. Create tables, queries, forms and reports
    3. Programming to create macros and a user interface
    4. Database backup, maintenance, import and export data
  - c. Web, telecommunications and network applications:
    1. HTML, XML and web development
    2. Browsing and searching the web
    3. Email and messaging
    4. Personal information managers

**Course Objectives**

- 1) Describe the components and functions of computer systems, including both hardware and software
- 2) Use modern productivity tools (i.e., spreadsheet, database) or custom programs to solve business problems
- 3) Describe the differences between various types of information systems and explain the importance of determining information system requirements for all management levels
- 4) Describe how the system development life cycle is used in building an information system to solve business problems
- 5) Describe the importance and use of data communications and the Internet, and explain how they affect the way business is conducted
- 6) Describe the ethical and social implications of using information technology within the context of the information systems industry

**Method of Evaluation**

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Practical exams which measure students' ability to analyze and evaluate solutions for business problems using modern productivity tools, or creating custom programs along with standard design principles of investigation, analysis, design, implementation and maintenance of an information systems solution to a business problem. For example:
  - a. Given a business problem and relevant data, students will either design and develop a custom software solution or evaluate and select the appropriate software needed to produce meaningful information to solve the problem and produce the correct solution.
  - b. Given a set of data and criteria for information to be extracted, students will design and populate a database with data to produce tables, queries, forms and reports useful in business operations.
  - c. Given a set of data, students will design and create a spreadsheet solution by organizing and formatting the data to produce meaningful information including a chart and features to automate operations in manipulation of that data.
- 2) Quizzes and exams that measure students' ability to compare and analyze information systems, develop and evaluate the results produced, and recommend revisions based on the results generated using the system development life cycle (SDLC) in creation of business solutions.
- 3) Practical exams or lab assignments that measure students' ability to design and evaluate a data delivery solution which uses the Internet as a vehicle for delivering the output from an information system. For example, given a database, students would be asked to export the results of a query and then create a web page which uses those results.

**Special Materials Required of Student**

Electronic storage media

**Minimum Instructional Facilities**

Computer lab with Internet access and software specified in class schedule

**Method of Instruction**

- 1) Lecture and demonstration
- 2) Textbook readings
- 3) Assignments

**Out-of-Class Assignments**

- 1) Text reading assignments
- 2) Practical application labs and projects

- 3) Exams and quizzes
- 4) Topical discussions on pertinent industry case studies and current events

### **Texts and References**

- 1) Required (representative examples):
  - a. O Leary, *Computing Essentials, Complete*. 2019 edition. McGraw-Hill, 2019.
  - b. Nordell, *Microsoft Office Access 2013 Complete: In Practice*. McGraw-Hill, 2019.
  - c. Nordell, *Microsoft Office Excel 2013 Complete: In Practice*. McGraw-Hill, 2019.
  - d. McGraw-Hill. Simnet license
  - e. McGraw-Hill. Connect license
  - f. Microsoft. Microsoft Office 2019.
- 2) Supplemental: None

### **Exit Skills**

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Understand the information systems SDLC process including investigation, analysis, design, implementation and maintenance:
  - a. Distinguish between the different sizes and types of computer systems.
  - b. Identify the components of a computer system: input, process, output, storage.
  - c. Explain the importance and use of data communications, local area networks and the Internet as an important element of business solutions.
- 2) Use application software including spreadsheets and databases to solve common business problems:
  - a. Use a database program to create and maintain a database; extract information from the database and create queries, forms and reports.
  - b. Understand the importance of the XML format and create an XML data file from an application.
  - c. Create a web page using HTML and XML.
- 3) Describe the different types of computer software programs and how they are typically used to solve business problems:
  - a. Explain the difference between systems and applications software.
  - b. Explain how data are represented within a computer.
  - c. Explain the data structures within the computer (field, file, etc.).
- 4) Identify characteristics of the information technology industry:
  - a. Discuss the social implications of information technology.
  - b. List and describe the various jobs and employment opportunities found within the information technology field.
  - c. Debate common ethics issues such as copyright, privacy and piracy.

### **Student Learning Outcomes**

Upon successful completion of this course, students will be able to:

- 1) Describe and discuss the components and functions of computer systems, including both hardware and software.
- 2) Analyze business problems using modern productivity tools.
- 3) Analyze information system requirements and propose feasible alternatives for IT solutions.
- 4) Describe and discuss the system-development life cycle.