

Montgomery College

Course Designator/Course Number:

CS 110

Course Title:

Computer Literacy

Course Length: 3 credits

3 50-minute meetings per week or equivalent

Course Description:

An introduction to the scope, significance, history & social implications of data processing. Study of programming language hierarchy, elements of a software system & program implementation. Exposure to hardware concepts including number systems, data representation, central processor, storage, input/output, & system configurations. No detailed study or implementation of any specific programming language.

General Learning Outcomes:

The student will complete assignments and will be able to demonstrate their knowledge and understanding of subject on quizzes, mid-term and final exams. Students will:

Become familiar with common computer related language

Describe components of computer systems and know their functions

Understand the principles by which computer systems work

Have minimum exposure to basic computer skills, such as the operating system and the World Wide Web.

Course Learning Objectives:

1. Explain what a computers is and how it works
2. Describe basic computer categories, components and concepts (sizes, central processing unit, memory, input/output and data storage)
3. Describe types of computer software (operating systems, utilities, programming languages and applications) their uses and evolution
4. Locate and run a variety of software applications on a personal computer
5. Perform basic computer file operations such as file location, creation, deletion, replication and backup, using operating system file management systems
6. Demonstrate basic proficiency in personal productivity software packages such as word processor and spreadsheet via a software performance assessment tool
7. Use email and other tools, such as distance learning, to communicate with class members and instructor
8. Explain the impact (benefits and limitations) of computer technology and information systems on modern society
9. Explain data security risks and computer viruses
10. Describe basic hardware, software, and computer work environment risk management strategies
11. Explain general data communications concepts and basic principles of connectivity

12. Describe the structure and functioning of the Internet
13. Locate on-line resources on the World Wide Web

Major Topics:

1.0 Introduction to Computers

- 1.1 Recognize the importance of computer literacy
- 1.2 Define the term, computer
- 1.3 Identify the components of a computer
- 1.4 Discuss the advantages and disadvantages of using computers
- 1.5 Recognize the purpose of a network
- 1.6 Discuss the uses of the Internet and World Wide Web
- 1.7 Distinguish between system software and application software
- 1.8 Describe the categories of computers
- 1.9 Identify the elements of an information system
- 1.10 Describe the various types of computer users
- 1.11 Discuss various computer applications in society

2.0 World Wide Web and Internet

- 1.1 Discuss the history of the Internet
- 1.2 Explain how to access and connect to the Internet
- 1.3 Analyze an IP address
- 1.4 Identify the components of a Web address
- 1.5 Explain the purpose of a Web browser
- 1.6 Search for information on the Web
- 1.7 Describe the types of Web sites
- 1.8 Recognize how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins
- 1.9 Identify the steps required for Web publishing
- 1.10 Describe the types of e-commerce
- 1.11 Explain how e-mail, mailing lists, instant messaging, chat rooms, VoIP, FTP, and newsgroups and message boards work
- 1.12 Identify the rules of netiquette

3.0 Application Software

- 1.1 Identify the categories of application software
- 1.2 Explain ways software is distributed
- 1.3 Explain how to work with application software
- 1.4 Identify the key features of widely used business programs
- 1.5 Identify the key features of widely used graphics and multimedia programs
- 1.6 Identify the key features of widely used home, personal, and educational programs
- 1.7 Identify the types of application software used in communications
- 1.8 Describe the function of several utility programs
- 1.9 Discuss the advantages of using Web-based software

1.10 Describe the learning aids available for application software

4.0 Systems

- 1.1 Differentiate among various styles of system units
- 1.2 Identify chips, adapter cards, and other components of a motherboard
- 1.3 Describe the components of a processor and how they complete a machine cycle
- 1.4 Identify characteristics of various personal computer processors on the market today
- 1.5 Define a bit and describe how a series of bits represents data
- 1.6 Explain how programs transfer in and out of memory
- 1.7 Differentiate among the various types of memory
- 1.8 Describe the types of expansion slots and adapter cards
- 1.9 Explain the differences among a serial port, a parallel port, a USB port, a FireWire port, and other ports
- 1.10 Describe how buses contribute to a computer's processing speed
- 1.11 Identify components in mobile computers and mobile devices
- 1.12 Understand how to clean a system unit

5.0 Input

- 1.1 Define input
- 1.2 List the characteristics of a keyboard
- 1.3 Describe different mouse types and how they work
- 1.4 Summarize how various pointing devices and controllers for gaming and media players work
- 1.5 Explain how voice recognition works
- 1.6 Describe various input devices for smart phones, PDAs, and Tablet PCs
- 1.7 Explain how a digital camera works
- 1.8 Describe the uses of Web cams and video conferencing
- 1.9 Discuss various scanners and reading devices and how they work
- 1.10 Explain the types of terminals
- 1.11 Summarize the various biometric devices
- 1.12 Identify alternative input devices for physically challenged users

6.0 Output

- 1.1 Describe the four categories of output
- 1.2 Summarize the characteristics of LCD monitors, LCD screens, plasma monitors, and CRT monitors
- 1.3 Describe various ways to print
- 1.4 Differentiate between a nonimpact printer and an impact printer
- 1.5 Summarize the characteristics of ink-jet printers, photo printers, laser printers, thermal printers, mobile printers, label and postage printers, and plotters and large-format printers
- 1.6 Describe the uses of speakers, headphones and earphones
- 1.7 Identify the output characteristics of fax machines and fax modems, multifunction peripherals, data projectors, interactive whiteboards, joysticks, wheels, gamepads, and motion-sensing game controllers

- 1.8 Identify output options for physically challenged users

7.0 Storage

- 1.1 Differentiate between storage devices and storage media
- 1.2 Describe the characteristics of magnetic disks
- 1.3 Describe the characteristics of a hard disk
- 1.4 Discuss various types of miniature, external, and removable hard disks
- 1.5 Describe the characteristics of optical discs
- 1.6 Differentiate among CD-ROMs, recordable CDs, rewritable CDs, DVD-ROMs, BD-ROMs, HD DVD-ROMs, recordable DVDs, and rewritable DVDs
- 1.7 Identify the uses of tape
- 1.8 Discuss PC Cards, ExpressCard modules, and the various types of miniature mobile storage media
- 1.9 Identify uses of microfilm and microfiche

8.0 OS and Utilities

- 1.1 Identify the types of system software
- 1.2 Summarize the startup process on a personal computer
- 1.3 Describe the functions of an operating system
- 1.4 Discuss ways that some operating systems help administrators control a network and administer security
- 1.5 Explain the purpose of the utilities included with most operating systems
- 1.6 Summarize the features of several stand-alone operating systems
- 1.7 Identify various network operating systems
- 1.8 Identify devices that use several embedded operating systems
- 1.9 Explain the purpose of several stand-alone utility programs

9.0 Communications

- 1.1 Discuss the components required for successful communications
- 1.2 Identify various sending and receiving devices
- 1.3 Describe uses of computer communications
- 1.4 List advantages of using a network
- 1.5 Differentiate among client/server, peer-to-peer, and P2P networks
- 1.6 Describe the various network communications standards
- 1.7 Explain the purpose of communications software
- 1.8 Describe various types of lines for communications over the telephone network
- 1.9 Describe commonly used communications devices
- 1.10 Discuss different ways to set up a home network
- 1.11 Identify various physical and wireless transmission media

10.0 Database Management

- 1.1 Define the term, database
- 1.2 Identify the qualities of valuable information
- 1.3 Explain why data is important to an organization
- 1.4 Discuss the terms character, field, record, and file
- 1.5 Identify file maintenance techniques
- 1.6 Differentiate between a file processing system approach and the database approach
- 1.7 Discuss the functions common to most DBMSs
- 1.8 Describe characteristics of relational, object-oriented, and multidimensional databases
- 1.9 Explain how to interact with Web databases
- 1.10 Discuss the responsibilities of database analysts and administrators

11.0 Computer Security

- 1.1 Describe the types of computer security risks
- 1.2 Identify ways to safeguard against computer viruses, worms, Trojan horses, botnets, denial of service attacks, back doors, and spoofing
- 1.3 Discuss techniques to prevent unauthorized computer access and use
- 1.4 Identify safeguards against hardware theft and vandalism
- 1.5 Explain the ways software manufacturers protect against software piracy
- 1.6 Define encryption and explain why it is necessary
- 1.7 Discuss the types of devices available that protect computers from system failure
- 1.8 Explain the options available for backing up computer resources
- 1.9 Identify risks and safeguards associated with wireless communications
- 1.10 Recognize issues related to information accuracy, rights, and conduct
- 1.11 Discuss issues surrounding information privacy
- 1.12 Discuss ways to prevent health-related disorders and injuries due to computer use

12.0 Information Systems Development

- 1.1 List the phases in the system development cycle
- 1.2 Identify the guidelines for system development
- 1.3 Discuss the importance of project management, feasibility assessment, documentation, and data and information gathering techniques
- 1.4 Explain the activities performed in the planning phase
- 1.5 Discuss the purpose of the activities performed in the analysis phase
- 1.6 Describe the various tools used in process modeling
- 1.7 Describe the various tools used in object modeling
- 1.8 Explain the activities performed in the design phase
- 1.9 Recognize the develop programs activity is part of the system development cycle
- 1.10 Discuss the activities performed in the implementation phase
- 1.11 Discuss the purpose of the activities performed in the operation, support, and security phase

13. Enterprise Computing

- 1.1 Discuss the special information requirements of an enterprise-sized corporation
- 1.2 Identify information systems used in the functional units of an enterprise

- 1.3 List general purpose and integrated information systems used throughout an enterprise
- 1.4 List types of technologies used throughout an enterprise
- 1.5 Describe the major types of e-commerce
- 1.6 Discuss the computer hardware needs and solutions for an enterprise
- 1.7 Determine why computer backup is important and how it is accomplished
- 1.8 Discuss the steps in a disaster recovery plan

14.0 Computer careers and certification

- 1.2 Discuss functions of jobs available in an IT department
- 1.3 Distinguish between trade schools and colleges
- 1.4 Differentiate among various computer-related majors for college students
- 1.5 Identify ways to stay current with changing technology after graduation
- 1.6 List the benefits of certification for employers, employees, and vendors
- 1.7 Identify ways to prepare for certification
- 1.8 List the general areas of IT certification
- 1.9 Name some specific IT certifications in each certification area