

Computer Science 1301 – Computer Literacy

Student Learning Outcomes

1. Introduction to Computers

Students will be introduced to basic computer concepts, such as what a computer is, how it works and what makes it a powerful tool. Students will also learn about the major computer technology developments during the past 72 years.

2. The Internet and the World Wide Web

Students will learn about the Internet, the World Wide Web, browsers, e-mail, FTP, and instant messaging.

3. Application Software

Students will be introduced to a variety of business software, graphics, and multimedia software, home/personal/educational software, and communications software.

4. The Components of the System Unit

Students will be introduced to the components of the system unit; how memory stores data, instructions, and information; and how the system unit executes an instruction.

5. Input

Students will be introduced to the various techniques of input and commonly used input devices. Special attention will be paid to personal mobile device operating systems, built-in personal mobile device software, personal mobile device application software and services, and how to obtain and install personal mobile device software. Students will also be introduced to a personal mobile device buyer's guide.

6. Output

Students will be introduced to the various techniques of output and commonly used output devices. As a special feature, students will be introduced to using a personal computer, digital camera, and digital video camera to manipulate and distribute photographs and video.

7. Storage

Students will learn about various storage media and storage devices.

8. Operating Systems and Utility Programs

Students will learn about a variety of stand-alone operating systems, network operating systems, and embedded operating systems. Students will also be introduced to the Buyer's Guide 2009: How to Purchase a Personal Computer.

9. Communications and Networks

Students will be introduced to an overview of communications technology and applications.

10. Database Management

Students will be presented with the advantages of organizing data in a database and they will investigate various types of data.

11. Computer Security, Ethics, and Privacy

Students will learn about computer and Internet risks, ethical issues surrounding information accuracy, intellectual property rights, codes of conduct, information privacy, and computer-related health issues. Time permitting, students will be introduced to the scope of, process, and tools involved in computer forensics work.

12. Information System Development

Students will be introduced to the system development cycle and guidelines for system development.

13. Programming Languages and Program Development

Students will be introduced to the program development cycle, program design methods, and popular programming languages.

14. Enterprise Computing

Students will learn about the special computing requirements used in an enterprise-sized organization. Time permitting, a case study will be used to introduce students to how modern-day enterprises process a customer order.

15. Computer Careers and Certification

Students will be presented with a broad overview of computer-related careers, career development, and certification. Time permitting, students will be introduced to a personal computer as a digital entertainment device.

Course Content

Textbook: *Discovering Computers 2009*, by Gary B. Shelly, Thomas J. Cashman, and Misty E. Vermaat. The following chapters including the particular sections listed are covered. (See textbook "Contents")

1. Introduction to Computers

- World of Computers
- What is a Computer?
- The Components of a Computer
- Advantages and Disadvantages of Using Computers
- Networks and the Internet
- Computer Software
- Categories of Computers
- Personal Computers
- Mobile Computers and Mobile Devices
- Game Consoles
- Servers
- Mainframes
- Supercomputers
- Embedded Computers
- Elements of an Information System
- Examples of Computer Usage
- Computer Applications in Society

2. The Internet and the World Wide Web

- The Internet
- History of the Internet
- How the Internet Works
- The World Wide Web
- E-Commerce
- Other Internet Services
- Netiquette

3. Application Software

- Application Software
- Business Software
- Graphics and Multimedia Software
- Software for Home, Personal, and Educational Use
- Application Software for Communications
- Popular Utility Programs
- Web-based Software
- Learning Aids and Support Tools for Application Software

4. The Components of the System Unit

- The System Unit
- Processor
- Data Representation
- Memory
- Expansion Slots and Adapter Cards

- Ports and Connectors
- Buses
- Bays
- Power Supply
- Mobile Computers and Devices
- Putting It All Together
- Keeping Your Computer Clean

5. Input

- What is Input?
- What are Input Devices?
- The Keyboard
- Pointing Devices
- Mouse
- Other Pointing Devices
- Controllers for Gaming and Media Players
- Voice Input
- Input for PDAs, Smart Phones, and Tablet PCs
- Digital Cameras
- Scanners and Reading Devices
- Terminals
- Biometric Input
- Putting It All Together
- Input Devices for Physically Challenged Users

6. Output

- What is Output?
- Display Devices
- Flat-Panel Displays
- CRT Monitors
- Printers
- Speakers, Headphones, and Earphones
- Other Output Devices
- Putting It All Together
- Output Devices for Physically Challenged Users

7. Storage

- Storage
- Magnetic Disks
- Optical Disks
- Tape
- PC Cards and Expresscards
- Miniature Mobile Storage Media
- Microfilm and Microfiche
- Enterprise Storage
- Putting It All Together

8. Operating Systems and Utility Programs

- System Software
- Operating Systems
- Operating System Functions
- Operating System Utility Programs
- Types of Operating Systems
- Stand-Alone Operating Systems
- Network Operating Systems
- Embedded Operating Systems

Stand-Alone Utility Programs

9. Communications and Networks

Communications

Uses of Computer Communications

Networks

Network Communications Standards

Communications Software

Communications Over the Telephone Network

Communications Devices

Home Networks

Communications Channel

Physical Transmission Media

Wireless Transmission Media

10. Database Management

Databases, Data and Information

The Hierarchy of Data

Maintaining Data

File Processing Versus Databases

Database Management Systems

Relational, Object-Oriented, and Multidimensional Databases

Web Databases

Database Administration

11. Computer Security, Ethics, and Privacy

Computer Security Risks

Internet and Network Attacks

Unauthorized Access and Use

Hardware Theft and Vandalism

Software Theft

Information Theft

System Failure

Backing Up – the Ultimate Safeguard

Wireless Security

Ethics and Society

Information Privacy

Health Concerns of Computer Use

12. Information System Development

The System Development Cycle

What Initiates the System Development Cycle?

Planning Phase

Analysis Phase

Design Phase

Implementation Phase

Operation, Support, and Security Phase

13. Programming Languages and Program Development

Computer Programs and Programming Languages

Low-Level Languages

Procedural Languages

Object-Oriented Programming Languages and Program Development Tools

Other Programming Languages

Other Program Development Tools

Web Page Development

Multimedia Program Development

- The Program Development Cycle
 - Step 1 – Analyze Requirements
 - Step 2 – Design Solution
 - Step 3 – Validate Design
 - Step 4 – Implement Design
 - Step 5 – Test Solution
 - Step 6 – Document Solution

14. Enterprise Computing

- What is Enterprise Computing?
- Information Systems in the Enterprise
- Enterprise-Wide Technologies and Methodologies
- E-Commerce
- Enterprise Hardware
- Backup Procedures

15. Computer Careers and Certification

- The Computer Industry
- Careers in the Computer Industry
- Preparing for a Career in the Computer Industry
- Certification
- A Guide to Certification