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Computer Science (COSC) 2020 Introduction to Computer Information Systems (3 Units) CSU
[formerly Computer Science 43]

Advisory: Eligibility for English 1500 strongly recommended

Total Hours: 32 hours lecture; 48 hours lab (80 hours total)

Catalog Description: This course is designed for students planning to enter computer science, science, business, education or other related fields. Learn basic through advanced computer concepts with an emphasis on both the personal computer and enterprise computing. Topics include hardware, application and system software, the Internet and World Wide Web, communications, e-commerce, societal issues, database management, systems analysis and design, programming, information systems career opportunities, certifications in the computer field, and computer trends. C-ID: BUS 140

Type of Class/Course: Degree Credit

Text: Vermaat, Misty. *Enhanced Discovering Computers 2017*. 1ˢᵗ ed. Cengage Learning, 2016.

Additional Instructional Materials: None

Course Objectives:

By the end of the course, a successful student should be able to:

1.   demonstrate the use of computer terminology,
2.   construct a data processing cycle,
3.   demonstrate the use of email, word processing, spreadsheet, presentation, database, and Web-based application software tools,
4.   develop an understanding of the uses of hardware,
5.   develop an understanding of the role of computers in today's business, and
6.   differentiate among the computer-based information systems.

Course Scope, Content, and Learning Outcomes:

Unit I   Introduction to Computers

        A.   Recognize the importance of computer literacy
        B.   Define the term computer and identify its components
        C.   Explain why a computer is a powerful tool
        D.   Recognize the purpose of a network
        E.   Discuss the uses of the Internet and World Wide Web
        F.   Distinguish between installing and running a program
        G.   Identify the types of software

H.   Describe the categories of computers
I.   Determine how elements of an information system interact
J.   Identify the types of computer users
K.   Discuss various computer applications in society

Unit II   The Internet and World Wide Web

A.   Discuss the history of the Internet
B.   Explain how to access and connect to the Internet
C.   Analyze an IP address
D.   Identify the components of a Web address
E.   Explain the purpose of a Web browser
F.   Search for information on the Web
G.   Describe the types of Web sites
H.   Recognize how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins
I.   Describe the types of e-commerce
J.   Explain how e-mail, FTP, newsgroups and message boards, mailing lists, chat rooms and instant messaging work
K.   Identify the rules of netiquette
L.   Identify the steps and tools required for Web publishing

Unit III   Application Software

A.   Identify the categories of application software
B.   Explain ways software is distributed
C.   Explain how to start and interact with application software
D.   Identify the key features of widely used business programs
E.   Identify the key features of widely used graphics and multimedia programs
F.   Identify the key features of widely used home, personal, and educational programs
G.   Identify the types of application software used in communications
H.   Discuss the advantages of using application software on the Web
I.   Describe the learning aids available for application software

Unit IV   The Components of the System Unit

A.   Differentiate among various styles of system units
B.   Identify chips, adapter cards, and other components of a motherboard
C.   Describe the components of a processor and how they complete a machine cycle
D.   Identify characteristics of various personal computer processors on the market today
E.   Define a bit and describe how a series of bits represents data
F.   Explain how programs transfer in and out of memory
G.   Differentiate among various types of memory
H.   Describe the types of expansion slots and adaptor cards

I.   Explain the differences among a serial port, a parallel port, a USB port , and other ports

J.   Describe how buses contribute to a computer's processing speed

K.   Identify components in mobile computers and mobile devices

Unit V   Input

A.   Define input

B.   List the characteristic of a keyboard

C.   Describe different mouse types and how they work

D.   Summarize how pointing devices work

E.   Explain how voice recognition works

F.   Describe various input devices for PDA's, Tablet PCs , and smart phones

G.   Explain how a digital camera works

H.   Describe the uses of PC video cameras, Web cams, and video conferencing

I.   Discuss various scanners and reading devices and how they work

J.   Explain the various types of terminals

K.   Summarize the various biometric devices

L.   Identify alternative input devices for physically challenged users

Unit VI   Output

A.   Describe the four categories of output

B.   Describe the characteristics of a CRT monitor and factors that affect its quality

C.   Explain the relationship between a video card and CRT monitor

D.   Summarize the characteristics of LCD monitors, LCD screens, Gas plasma displays, and HDTVs

E.   Differentiate between an impact printer and a non-impact printer

F.   Summarize the characteristics of ink-jet printers, photo printers, laser printers, label and postage printers, and plotters and large-format printers

G.   Describe the methods used for wireless printing

H.   Describe the uses of speakers and headsets

I.   Identify the output characteristics of fax machines and fax modems, multifunction peripherals, data projectors, joysticks, and wheels

J.   Identify output options for physically challenged users

Unit VII   Storage

A.   Discuss the various types of items that users store on computer media

B.   Differentiate between storage devices and storage media

C.   Describe the characteristics of a floppy disc drive

D.   Identify the uses of Zip disks

E.   Describe the characteristics of a hard disk

F.   Identify the advantages of using an internet hard drive

G.   Describe the characteristics of CDs and DVDs

H.   Differentiate among CD=ROMs, CD-RWs, DVD-ROMs, and DVD+RWs

I.   Identify the uses of tape

J.   Discuss PC Cards and the various types of miniature storage media

K.   Identify uses of microfilm and microfiche

Unit VIII   Operating Systems and Utility Programs

A. Identify the types of system software
B. Summarize the startup process on a personal computer
C. Describe the functions of an operating system
D. Discuss ways that some operating systems help administrators control a network and administer security
E. Explain the purpose of the utilities included with most operating systems
F. Summarize the features of several stand-alone operating systems
G. Identify various network operating systems
H. Identify devices that use several embedded operating systems
I. Explain the purpose of several stand-alone utility programs

Unit IX   Communications and Networks

A. Discuss the components required for successful communications
B. Identify various sending and receiving devices
C. Describe the uses of computer communications
D. List advantages of using a network
E. Differentiate among client/server, peer-to-peer, and P2P networks
F. Describe the various network communications technologies
G. Explain the purpose of communications software
H. Describe various types of lines for communications over the telephone network
I. Describe commonly used communications devices
J. Discuss different ways to set up a home network
K. Identify various physical and wireless transmission media

Unit X   Database Management

A. Identify the qualities of valuable information
B. Explain why data is important to an organization
C. Discuss the terms character, field, record, and file
D. Identify file maintenance techniques
E. Differentiate between a file processing system approach and the database approach
F. Discuss the functions common to most DBMSs
G. Describe characteristics of relational, object-oriented, and multidimensional databases
H. Explain how Web databases work
I. Discuss the responsibilities of database analysts and administrators

Unit XI   Computers and Society, Security, Privacy, and Ethics

A. Describe the types of computer security risks
B. Identify ways to safeguard against computer viruses, worms, and Trojan horses
C. Discuss techniques to prevent unauthorized computer access and use
D. Identify safeguards against hardware theft and vandalism
E. Explain the ways software manufacturers protect against software piracy
F. Define encryption and explain why it is necessary
G. Discuss the types of devices available that protect from system failure
H. Explain the options available for backing up computer resources
I. Identify safeguards that protect against internet security risks

J.   Recognize issues related to information accuracy, rights, and conduct
K.   Discuss issues surrounding information privacy
L.   Discuss ways to prevent health-related disorders and injuries due to computer use

Unit XII   Information System Development

A.   List the phases in the system development cycle
B.   Identify the guidelines for system development
C.   Discuss the importance of project management, feasibility assessment, data and information gathering techniques, and documentation
D.   Explain the activities performed in the planning phase
E.   Discuss the purpose of the activities performed in the analysis phase
F.   Describe the various tools used in process modeling
G.   Describe the various tools used in object modeling
H.   Explain the activities performed in the design phase
I.   Recognize program development in the implementation phase
J.   Understand how IT professionals support an information system

Unit XIII   Programming Languages and Program Development

A.   Differentiate between machine and assembly languages
B.   Identify and discuss the purpose of procedural programming languages
C.   Discuss the advantages and uses of visual programming languages
D.   Identify and discuss the characteristics of object-oriented programming languages
E.   Identify the uses of various nonprocedural languages and tools
F.   Describe various ways to develop Web pages, including HTML, scripting languages, DHTML, XML, XML, and Web page authoring software
G.   Identify the uses of popular multimedia authoring programs
H.   List the six steps in the program development cycle
I.   Differentiate between structured design and object-oriented design
J.   Explain the basic control structures used in designing solutions to programming Problems

Unit XIV   Enterprise Computing

A.   Discuss the special information requirements of an enterprise-sized corporation
B.   Identify information systems used in the functional units of an enterprise
C.   List general purpose and integrated information systems used throughout an enterprise
D.   List types of technologies used throughout an enterprise
E.   Explain how e-retailing works
F.   Identify e-commerce market sectors
G.   Discuss the computer hardware needs and solutions for an enterprise
H.   Determine why computer backup is important and how it is accomplished
I.   Discuss the steps in a disaster recovery plan
J.   Discuss the importance of computer security in an enterprise

Unit XV   Computer Careers and Certification

A.   Describe career opportunities available in various segments of the computer industry
B.   Discuss functions of jobs available in an IT department
C.   Differentiate among various college computer-related course of study
D.   Identify ways to stay current with changing technology after graduation
E.   List the benefits of certification for employers, employees, and vendors
F.   Identify ways to prepare for certification
G.   List the general areas of IT certification
H.   Name some specific IT certifications in each certification area

Course Scope and Content for Lab:

Unit I   Operating Systems

A.   Identify objects on the desktop
B.   Create folders
C.   Manage files

Unit II   Email

A.   Using email and working with messages
B.   Managing your time using a calendar
C.   Manage contacts and personal information
D.   Learning task basics and creating notes
E.   Organizing information

Unit III   Word Processing Application

A.   Design and construct a Word document
B.   Format text and paragraphs
C.   Change theme colors
D.   Insert pictures into a Word document
E.   Format pictures
F.   Add a page border
G.   Correct errors and revise a document
H.   Work with headers and footers
I.   Change margins
J.   Add borders to paragraphs
K.   Apply a Quick Style
L.   Set and use tab stops
M.   Insert a table, enter data into the table, and format the table

Unit IV   Spreadsheet Application

A.   Design and construct an Excel worksheet
B.   Format worksheet elements using cell styles
C.   Apply a theme to a workbook
D.   Format numeric entries
E.   Change the worksheet name and tab color

      F.   Correct worksheet errors
      G.   Enter formulas
      H.   Apply the SUM, AVERAGE, MAX, and MIN functions
      I.   Add borders to worksheet elements
      J.   Create charts

Unit V   Presentation Application

      A.   Design and construct a PowerPoint presentation
      B.   Select a document theme and change theme colors
      C.   Add new slides and change slide layouts
      D.   Insert images into slides and slide backgrounds
      E.   Format slide text
      F.   Insert slide footers
      G.   Apply slide transition effects and adjust duration
      H.   Apply animation effects to slide elements
      I.   Apply and format a WordArt style

Unit VI   Database Application

      A.   Create access tables to satisfy a collection of requirements
      B.   Add, delete, and modify table records
      C.   Specify validation rules, default values, and formats
      D.   Create simple table queries
      E.   Create and modify an Access form
      F.   Create and modify an Access report

Unit VII   Web Application

      A.   Create a Pandora account to utilize an Internet radio service
      B.   Create a Skype account to conduct Internet calls and video calls
      C.   Design and create a multi-page, multimedia Web site utilizing Weebly.com

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 6 hours per week outside of the regular class time doing the following:

Methods of Instruction:
      1.   Lecture, demonstration, class discussion, and problem solving
      2.   Assigned reading from the texts and references
      3.   Assigned problems from the texts
      4.   Lab projects to be submitted by students

Methods of Evaluation:
1.   Computational or non-computational problem solving demonstrations, including:
      a.   exams
      b.   homework problems
      c.   quizzes
2.   Other examinations, including:

a. multiple choice
b. true/false
c. completion
d. using software tools in class