Introduction to Computer Technology

Semester Hours Credit: 4

Instructor: __________________________

Office Hours: ________________________

I. INTRODUCTION

This is an introductory course covering the setup, operation and basic preventive maintenance of the personal computer system. This course will include an introduction to the basic operating system software as well as the introduction of other software programs useful to the first-time computer operator.

This course is a requirement in the Computer Electronics Technology and the Communication Electronics Technology degrees.

This course is occupationally related and serves as preparation for careers in Computer Electronics and Communication Electronics.

Prerequisite(s): None

II. LEARNING OUTCOMES

Upon successful completion of this course, Introduction to Computer Technology, the student will:

A. Identify basic computer components and their uses

B. Utilize word processing program and presentation software.

C. Employ the Internet resources for research.

D. Create a web page/site

III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books

B. Ear phones with 1/8th miniature jacks for use with computers
IV COURSE REQUIREMENTS:

A. Reading Assignments: Section text as assigned. The student will be tested at the end of each unit.

B. Projects:
   1. An oral presentation using MS PowerPoint. A list of subjects, time constraints and research requirements will be handed out in class.
   2. A variety of projects using MS Word. A list of subjects, time constraints, research requirements and formatting guidelines will be handed out in class.
   3. A web page/site. A list of subjects, time constraints, research requirements and formatting guidelines will be handed out in class.

C. Class Performance: Students are required to be in class on time. It is the recommendation of this department that students exchange telephone numbers so that they may acquire missed lecture notes and assignments.

D. Class Participation: Students will be graded on class participation using a computer generated response system. Students are expected to respond as required.

V. EXAMINATIONS

There will be exams covering the units completed in class and a comprehensive Final Exam. Classroom attendance will be a part of your grade. To obtain credit for attendance you must report to class in a timely manner and remain in class.

VI. SEMESTER GRADE COMPUTATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Grade Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes/Homework</td>
<td>100</td>
<td>1000 - 900 = A</td>
</tr>
<tr>
<td>Mid Term Exam</td>
<td>250</td>
<td>899 - 800 = B</td>
</tr>
<tr>
<td>Final Exam</td>
<td>250</td>
<td>799 - 700 = C</td>
</tr>
<tr>
<td>Term Paper</td>
<td>100</td>
<td>699 - 600 = D</td>
</tr>
<tr>
<td>Presentation</td>
<td>100</td>
<td>599 - 0 = F</td>
</tr>
<tr>
<td>Website</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>News Articles (10)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>

VII. ATTENDANCE

Students are required to attend all classes in which they have enrolled. Students are required to be in the classroom on time and remain for the duration of the class. Any time a student has 10 hours absence, an administrative withdrawal will be submitted.

A. Four Classes of 2 1/2 hours = 10 Hours
B. Late for Class = 1 Hour Absence: 10 Times = 10 Hours
A. **Course Withdrawal**: It is the student’s responsibility to officially withdraw from a course if circumstances prevent attendance. Any student who desires to, or must, officially withdraw from a course after the first scheduled class meeting must file a Central Texas College Application of Withdrawal (CTC Form 59). The withdrawal form must be signed by the student.

CTC Form 59 will be accepted at any time prior to Friday of the 12th week of class during the 16-week fall and spring semesters. The deadline for sessions of the other lengths is:

- 10-week session: Friday of the 8th week
- 8-week session: Friday of the 6th week
- 5-week session: Friday of the 4th week

The equivalent date (75% of the semester) will be used for sessions of other lengths. The specific last day to withdraw is published each semester in the Student Bulletin.

A student who officially withdraws will be awarded the grade of “W” provided the student’s attendance and academic performance are satisfactory at the time of official withdrawal. Students must file a withdrawal application with the College before they may be considered for withdrawal.

A student may not withdraw from a class for which the instructor has previously issued the student a grade of “F” or “FN” for nonattendance.

B. **Administrative Withdrawal**: An administrative withdrawal may be initiated when the student fails to meet College attendance requirements. The instructor will assign the appropriate grade on CTC Form 59 for submission to the registrar.

C. **Incomplete Grade**: The College catalog states, an incomplete grade may be given in those cases where the student has completed the majority of the course work but, because of personal illness, death in the immediate family, or military orders, the student is unable to complete the requirements for a course. Prior approval from the instructor is required before the grade of “IP” for Incomplete is recorded.

A student who merely fails to show for the final examination will receive a zero for the final and an F for the course.

D. **Cellular Phones and beepers**: Cellular phones and beepers will be turned off while the student is in the classroom or laboratory.

E. **Americans with Disabilities Act (ADA)**: Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is
available to all students, regardless of location. Explore the website at www.ctcd.edu/disability-support for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

F. Instructor Discretion: The instructor reserves the right of final decision in course requirements.

G. Civility: Individuals are expected to be cognizant of what a constructive educational experience is and respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion.

IX. COURSE OUTLINE

A. Lesson One: Introduction to Computers

1. Learning Outcomes: Upon successful completion of this lesson the student will be able to:
   
   a. Explain why computer literacy is vital to success in today’s world
   b. Define the term computer and describe the relationship between data and information
   c. Describe the five components of a computer: input devices, output devices, system unit, storage devices, and communications devices
   d. Discuss the advantages and disadvantages that users experience when working with computers
   e. Define the term network and identify benefits of sharing resources on a network
   f. Discuss the uses of the Internet and World Wide Web
   g. Distinguish between system software and application software
   h. Differentiate among types, sizes, and functions of computers in each of these categories: personal computers (desktop), mobile computers and mobile devices, game consoles, servers, mainframes, supercomputers, and embedded computers
   i. Describe the role of each element in an information system
   j. Explain how home users, small office/home office users, mobile users, power users, and enterprise users each interact with computers
   k. Discuss how society uses computers in education, finance, government, health care, science, publishing, travel, and manufacturing

2 Learning Activities:
   
   a. Classroom Lecture/Discussion (F5, F6)
   b. Reading Assignment: Chapter 1 (F1)
   c. Complete the Checkpoint exercises at end of chapter (C5, C8, C15)
   d. Complete Critical Thinking #3 page 53. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 47. (C5, C8, C15)
B. Lesson Two: The Internet and World Wide Web

1. Learning Outcomes: Upon successful completion of this lesson the student will be able to:

   a. Discuss the evolution of the Internet
   b. Identify and briefly describe various broadband Internet connections and state differences between broadband Internet connections and dial-up connections
   c. Describe the types of Internet access providers: Internet service providers, online service providers, wireless Internet service providers
   d. Describe the purpose of an IP address and its relationship to a domain name
   e. Explain the purpose of a Web browser and identify the components of a Web Address
   f. Describe how to use a search engine to search for information on the Web and differentiate between a search engine and a subject directory
   g. Describe the types of Web sites: portal, news, informational, business/marketing, blog, wiki, online social network, educational, entertainment, advocacy, Web application, content aggregator, and personal
   h. Explain how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins
   i. Identify and briefly describe the steps required for Web publishing
   j. Describe the types of e-commerce: business-to-consumer, consumer-to-consumer, and business-to-business
   k. Explain how e-mail, mailing lists, instant messaging, chat rooms, VoIP, newsgroups and message boards, and FTP work
   l. Identify the rules of netiquette

2. Learning Activities:

   a. Classroom Lecture/Discussion (F5, F6)
   b. Reading Assignment: Chapter 2 (F1)
   c. Complete the Checkpoint exercises at end of chapter (C5, C8, C15)
   d. Complete Critical Thinking #2 page 123. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 117. (C5, C8, C15)

C. Lesson Three: Application Software

1. Learning Outcomes: Upon successful completion of this lesson the student will be able to:

   a. Identify the four categories of application software
b. Differentiate among the seven forms through which software is available: packaged software, custom software, Web application, open source software, shareware, freeware, and public-domain software.
c. Explain how the operating system and utility programs work with application software.
d. Describe characteristics of a user interface.
e. Identify the key features of widely used business programs: word processing, spreadsheet, database, presentation, note taking, personal information manager, business software for phones, business software suite, project management, accounting, document management, and enterprise computing.
f. Identify the key features of widely used graphics and multimedia programs: computer-aided design, professional desktop publishing, professional paint/image editing, professional photo editing, professional video and audio editing, multimedia authoring, and Web page authoring.
g. Identify the key features of widely used home, personal, and educational programs: personal finance, legal, tax preparation, personal desktop publishing, personal paint/image editing, personal photo editing and photo management, clip art/image gallery, personal video and audio editing, travel and mapping, reference and educational, and entertainment.
h. Discuss the advantages of and ways to access Web applications.
i. Identify the types of application software used in communications.
j. Describe the learning aids available for application software.

2. **Learning Activities:**

a. Classroom Lecture/Discussion (F5, F6)
b. Reading Assignment: Chapter 3 (F1)
c. Complete Checkpoint exercises at end of chapter (C5, C8, C15)
d. Complete Critical Thinking #3 page 191. (F2) (C5, C8, C15)
e. Complete Learn It Online #3 and 4 page 185. (C5, C8, C15)

D. **Lesson Four: The Components of the System Unit**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:

a. Differentiate among various styles of system units on desktop computers, notebook computers, and mobile devices.
b. Identify chips, adapter cards, and other components of a motherboard.
c. Describe the control unit and arithmetic logic unit components of a processor, and explain the four steps in a machine cycle.
d. Identify characteristics of various personal computer processors on.
the market today, and describe the ways processors are cooled

e. Define a bit and describe how a series of bits represents data
f. Explain how program instructions transfer in and out of memory
g. Differentiate among the various types of memory: RAM, cache, ROM, flash memory, and CMOS
h. Describe the purpose and types of expansion slots and adapter cards, and differentiate among slots for various removable flash memory devices
i. Differentiate between a port and a connector, and explain the differences among a USB port, FireWire port, Bluetooth port, SCSI port, eSATA port, IrDA port, serial port, and MIDI port
j. Describe the types of buses in a computer: front side bus, backside bus, and expansion buses (PCI bus, PCIe bus, AGP, USB, FireWire bus, and PC Card bus)
k. Explain the purpose of a power supply and describe how it keeps cool
l. Understand how to clean a system unit on a computer or mobile device

2. Learning Activities:
   a. Classroom Lectures/Discussion (F5, F6)
   b. Reading Assignment: Chapter 4 (F1)
   c. Complete Checkpoint exercises at end of the chapter (C5, C8, C15)
   d. Complete Critical Thinking #2 page 255. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 249. (C5, C8, C15)

A. Lesson Five: Input

1. Learning Outcomes: Upon successful completion of this lesson the student will be able to:
   a. Define input and differentiate among a program, command, and user response
   b. Identify the keys and buttons commonly found on desktop computer keyboards, and describe how keyboards for mobile computers and devices differ from desktop computer keyboards
   c. Describe different mouse types and explain how to use a mouse
   d. Describe various types of touch screens and explain how a touch-sensitive pad works
   e. Describe various types of pen input, and identify other types of input for smart phones
   f. Summarize the purpose of various game controllers: gamepads, joysticks and wheels, light guns, dance pads, and motion-sensing game controllers
   g. Explain how resolution affects the quality of a picture captured on a digital camera
   h. Describe the uses of voice recognition, Web cams, and video

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i. Discuss how various scanners and reading devices work: optical scanners, optical readers, bar code readers, RFID readers, magnetic stripe card readers, MICR readers, and data collection devices.

j. Summarize the various biometric devices: fingerprint reader, face recognition system, hand geometry system, voice verification system, signature verification system, and iris recognition system.

k. Discuss how POS terminals, automated teller machines, and DVD kiosks work.

l. Identify alternative input devices for physically challenged users.

2. Learning Activities:

   a. Classroom Lectures/Discussion (F5, F6)
   b. Reading Assignment: Chapter 5 (F1)
   c. Complete Checkpoint exercises at end of chapter (C5, C8, C15)
   d. Complete Critical Thinking #1 page 301. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 295. (C5, C8, C15)

F. Lesson Six: Output

1. Learning Outcomes: Upon successful completion of this lesson the student will be able to:

   a. Describe the types of output: text, graphics, audio, and video
   b. Explain the characteristics of various display devices: LCD monitors, LCD screens, plasma monitors, and CRT monitors
   c. Describe the factors that affect the quality of an LCD monitor or LCD screen: resolution, response time, brightness, dot pitch, and contrast ratio
   d. Describe various ways to print
   e. Differentiate between a nonimpact printer and an impact printer
   f. Summarize the characteristics of ink-jet printers, photo printers, laser printers, multifunction peripherals, thermal printers, mobile printers, label and postage printers, and plotters and large-format printers
   g. Describe the uses and characteristics of speakers, headphones, and earbuds
   h. Identify the purpose and features of data projectors, interactive whiteboards, and force-feedback game controllers and tactile output
   i. Identify output options for physically challenged users

2. Learning Activities:

   a. Classroom Lectures/Discussion (F5, F6)
   b. Reading Assignment: Chapter 6 (F1)
   c. Complete Checkpoint exercises at end of chapter (C5, C8, C15)
   d. Complete Critical Thinking #2 page 343. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 337.(C5, C8, C15)
G. Lesson Seven: Storage

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   
a. Differentiate between storage devices and storage media
b. Describe the characteristics of an internal hard disk including capacity, platters, read/write heads, cylinders, sectors and tracks, revolutions per minute, transfer rate, and access time
c. Discuss the purpose of network attached storage devices, external and removable hard disks, and hard disk controllers
d. Describe the various types of flash memory storage: solid state devices, memory cards, USB flash drives, and ExpressCard modules
e. Describe cloud storage and explain its advantages
f. Describe the characteristics of optical discs
g. Differentiate among various types of optical discs: CDs, archive discs and Picture CDs, DVDs, and Blu-ray Discs
h. Identify the uses of tape, magnetic stripe cards, smart cards, microfilm and microfiche, and enterprise storage

2. **Learning Activities:**
   
a. Classroom Lectures/Discussion (F5, F6)
b. Reading Assignment: Chapter 7 (F1)
c. Complete Checkpoint exercises at end of chapter (C5, C8, C15)
d. Complete Critical Thinking #1 page 395. (F2) (C5, C8, C15)
e. Complete Leave It Online #3 and 4 page 389. (C5, C8, C15)

H. Lesson Eight: Operating Systems and Utility Programs

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   
a. Define system software and identify the two types of system software
b. Describe each of these functions of an operating system: starting and shutting down a computer, providing a user interface, managing programs, managing memory, coordinating tasks, configuring devices, establishing an Internet connection, monitoring performance, providing file management and other utilities, updating automatically, controlling a network, and administering security
c. Summarize the startup process on a personal computer
d. Summarize the features of several stand-alone operating systems: Windows, Mac OS, UNIX, and Linux
e. Briefly describe various server operating systems: Windows Server, UNIX, Linux, Solaris, and NetWare
f. Summarize the features of several embedded operating systems: Windows Embedded CE, Windows Mobile, Palm OS, iPhone OS,
BlackBerry, Google Android, Embedded Linux, and Symbian OS

g. Explain the purpose of several utility programs: file manager, search utility, image viewer, uninstaller, disk cleanup, disk defragmenter, backup and restore utilities, screen saver, personal firewall, antivirus programs, spyware and adware removers, Internet filters, file compression, media player, disc burning, and personal computer maintenance

2. **Learning Activities:**

   a. Classroom Lectures/Discussion (F5, F6)
   b. Reading Assignment: Chapter 8 (F1)
   c. Complete Checkpoint Exercises at end of chapter (C5, C8, C15)
   d. Complete Critical Thinking #1 page 443. (F2) (C5, C8, C15)
   e. Complete Learn It Online #3 and 4 page 437. (C5, C8, C15)