CENTRAL TEXAS COLLEGE
ITSC 1301
INTRODUCTION TO COMPUTERS

Semester Hours Credit: 3

INSTRUCTOR: _____

OFFICE HOURS: _____

I. INTRODUCTION

A. This course is an overview of computer information systems. The course introduces computer hardware, software, procedures and human resources. Overview of computer systems hardware, operating systems, the Internet, and application software including word processing, spreadsheets, presentation graphics, and databases. Current topics such as the effect of computers on society, and the history and use of computers in business, educational, and other interdisciplinary settings are also studied. This course is not intended to count toward a student's major field of study in business or computer science.

B. This course serves as a required or elective course on various degree plans. Curriculum plans for degrees and certificates are listed in the current Central Texas College catalog.

C. The delivery method of this course may be traditional lecture/lab, blended lecture/lab, or online.

D. Prerequisites: None.

II. LEARNING OUTCOMES

Upon successful completion of this course, students will:

A. Identify the components of a computer system (C5, C6, C8, C15, C19, C20).
B. Describe the fundamentals of computing infrastructure components: hardware, application software, operating systems, and data communications systems (C5, C6, C8, C15, C19, C20).
C. Delineate and discuss societal issues related to computing, including the guiding principles of professional and ethical behavior (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).
D. Use common applications (C3, C5, C6, C8, C15, C17, C18, C19, C20, F8, F9, F12).
E. Demonstrate the ability to create and use documents, spreadsheets, presentations and databases in order to communicate and store information as well as to support

problem solving (C3, C5, C6, C8, C15, C17, C18, C19, C20, F8, F9, F12).

F. Explain the impact of computers on society (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

G. Identify computer careers (C5, C6, C8, C15, C19, C20) .

H. Identify ethical use of computers (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

I. Use basic operating system functions (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

J. Explain basic Internet functions (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

K. Describe the need and ways to maintain security in a computing environment (C5, C6, C8, C11, C15, C18, C19, F1, F8, F9).

L. Explain how networks work (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

M. Identify fundamental programming structures and demonstrate proficiency in basic operating systems functions (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).

III. INSTRUCTIONAL MATERIALS

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

B. Lecture Classes also require at least one USB storage device. Online students may use cloud based storage.

IV. COURSE REQUIREMENTS

A. Attend both lecture and lab or in the case of online delivery, be actively engaged in Blackboard and maintain constant progress.

B. Be prepared to participate in discussion, team projects/assignments and take unannounced assessments relating to the lecture materials.

C. Complete all exams/assessments.

D. Submit all assignments on time.

V. ASSESSMENTS

A. Student content mastery will be evaluated in the following areas:

- **Assessments (midterm exam, quizzes, projects, discussion etc.)**
- **Final Assessment (final exam and/or semester project, participation)**

B. Scheduled and unscheduled assessments will be given at the discretion of the instructor.

C. Exams/assessments may be composed of both subjective and objective questions plus computer output.

D. A student must take all exams/assessments. No make-up exams/assessments will be given. Both online and on campus students who know in advance that they will be absent due to school sponsored trips, military duty or orders, or any other valid reason, must arrange to take an early exam/assessment. Unexpected absences due to illness or other extenuating circumstances will require the student to contact the instructor about make-up work in lieu of the missed exam/assessment.

E. Students with unexcused absences will be given a zero for each missed assignment.

VI. SEMESTER GRADE COMPUTATION

Course Requirements	Points
Assignments	300
Assessments	300
Final Assessment	400
TOTAL	1000

Points	Grade	Quality Points
900-1000	A-Superior	4
800-899	B-Above Average	3
700-799	C-Average	2
600 - 699	D – Passing but Unsatisfactory	1
0 -599	F-Failure	0

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

A. Information on the following Academic Policies, as described in the CTC Course Catalog will be followed:

1. **Withdrawals**
2. **Grading**
3. **Class Attendance and Course Progress**
4. **Scholastic Honesty**

B. Cell Phones and Pagers: Students will silence cell phones and mobile devices while in the classroom or lab.

C. 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. Review 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.

D. Instructor Discretion: The instructor reserves the right of final decision in course requirements and may make changes to the course outline and/or assignments as needed.

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

VIII. COURSE OUTLINE

A. <u>Unit 1</u>: This unit will introduce course requirements and objectives; lab orientation; and an overview of Information Technology, the Internet, Privacy, Security, and Ethics. You will learn about information systems—how the critical parts of technology interact, efficiency and effectiveness—how to maximize the use of technology; privacy, ethics, and environment—how to integrate technology with people; connectivity and cloud computing—how the Internet, web, and the wireless revolution are changing how we communicate and interact; cybercrime and how to protect yourself from viruses, Internet scams, and identity theft; privacy rights and what companies can legally record about your Internet usage and how they use that information; and safe computing and how to avoid embarrassment and worse by knowing the way social networking shares your information.

1. <u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:

- **a. Understand course requirements and objectives as defined in the syllabus and reviewed by the instructor**
- **b. Utilize hardware and software required for this course**
- **c. Explain the parts of an information system: people, procedures, software, hardware, data, and the Internet.**
- **d. Distinguish between system software and application software.**
- **e. Differentiate between the three kinds of system software programs.**
- **f. Define and compare general-purpose, specialized, and mobile applications.**
- **g. Identify the four types of computers and the five types of personal computers.**
- **h. Describe the different types of computer hardware, including the system unit, input, output, storage, and communication devices.**
- **i. Define data and describe document, worksheet, database, and presentation files.**
- **j. Explain computer connectivity, the wireless revolution, the Internet, cloud computing, and loT.**
- **k. Identify the most significant concerns for effective implementation of computer technology.**
- **l. Discuss the primary privacy issues of accuracy, property, and access.**
- **m. Describe the impact of large databases, private networks, the Internet, and the web on privacy.**
- **n. Discuss online identity and the major laws on privacy.**
- **o. Discuss cybercrimes including creation of malicious programs such as viruses, worms, Trojan horses, and zombies as well as denial of service attacks, Internet scams, identity theft, cyberbullying, rogue Wi-Fi hotspots, and data manipulation.**
- **p. Detail ways to protect computer security including restricting access, encrypting data, anticipating disasters, and preventing data loss.**

q. **Discuss computer ethics including copyright law, software piracy, digital rights management, the Digital Millennium Copyright Act, as well as plagiarism and ways to identify plagiarism.**

2. **<u>Learning Activities</u>:**
   a. **Discuss syllabus**
   b. **Conduct Lab demonstration**
   c. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   d. **Student will read assignments on each topic. (C5, F1, F11)**
   e. **Student participation in discussion of each topic. (C7, F6)**
   f. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

B. **<u>Unit 2</u>: In this unit you will learn about how Internet technology is changing your world; how to connect your life to the Internet, including Wi-Fi, smartphones, and tablets; how to get ahead using social networking, streaming technology, and cloud computing; wired networks; about coaxial and fiber-optic cables so you can make smart decisions about home Internet connections.; how to use your digital devices in smarter and safer ways by understanding Wi-Fi, satellites and Bluetooth; and how to become a digital road warrior using 4G data networks and GPS..**

1. **<u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:**
   a. **Explain the origins of the Internet and the web.**
   b. **Explain how to access the web using providers and browsers.**
   c. **Compare different web utilities, including plug-ins, filters, file transfer utilities, and Internet security suites.**
   d. **Compare different Internet communications, including e-mail, text messaging, instant messaging, social networking, blogs, microblogs, webcasts, podcasts, and wikis.**
   e. **Describe search tools, including search engines and specialized search engines.**
   f. **Evaluate the accuracy of information presented on the web.**
   g. **Identify electronic commerce, including B2C, C2C, B2B, and security issues.**
   h. **Describe cloud computing, including the three-way interaction of clients, Internet, and service providers.**
   i. **Discuss the Internet of Things (IoT) and the continuing development of the Internet to allow everyday objects to send and receive data.**
   j. **Explain connectivity, the wireless revolution, and communication systems.**
   k. **Describe physical and wireless communication channels.**

l. **Differentiate between connection devices and services including dial-up, DSL, cable, satellite, and cellular.**
m. **Describe data transmission factors, including bandwidth and protocols.**
n. **Define networks and key network terminology including network interface cards and network operating systems.**
o. **Describe different types of networks, including local, home, wireless, personal, metropolitan, and wide area networks.**
p. **Describe network architectures, including topologies and strategies.**
q. **Explain the organization issues related to Internet technologies and network security.**

2. **<u>Learning Activities</u>:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

C. **<u>Unit 3</u>: In this unit you will learn how to create documents, analyze data, make presentations, and organize information; how to use graphics programs for image editing and creating web pages and how to locate and use mobile apps; how to use suites and cloud-based applications; how operating systems control and protect desktop and laptop computers; how key features of operating systems control tablets and cell phones; and how to protect your computer from viruses and perform important maintenance tasks.**

1. **<u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:**
   a. **Identify general-purpose applications.**
   b. **Describe word processors, spreadsheets, presentation programs, and database management systems.**
   c. **Identify specialized applications.**
   d. **Describe graphics programs, web authoring programs, and other specialized professional applications.**
   e. **Describe mobile apps and app stores.**
   f. **Identify software suites.**
   g. **Describe office suites, cloud suites, specialized suites, and utility suites.**
   h. **Describe the differences between system software and application software.**
   i. **Identify the four types of system software programs.**
   j. **Explain the basic functions, features, and categories of operating systems.**

k. **Compare mobile operating systems, including iOS, Android, and Windows Phone.**
l. **Compare desktop operating systems, including Windows, Mac OS, UNIX, Linux, and virtualization.**
m. **Explain the purpose of utilities and utility suites.**
n. **Identify the four most essential utilities.**
o. **Describe Windows utility programs.**

2. **<u>Learning Activities</u>:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

D. <u>Unit 4</u>: Information Systems Components and Infrastructure

1. **<u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:**
   a. **Differentiate between the five basic types of system units.**
   b. **Describe system boards, including sockets, slots, and bus lines.**
   c. **Recognize different microprocessors, including microprocessor chips and specialty processors.**
   d. **Compare different types of computer memory, including RAM, ROM, and flash memory.**
   e. **Explain expansion slots and cards.**
   f. **Describe bus lines, bus widths, and expansion buses.**
   g. **Describe ports, including standard and specialized ports.**
   h. **Identify power supplies for desktop, laptop, tablet, and mobile devices.**
   i. **Explain how a computer can represent numbers and encode characters electronically.**
   j. **Define input and output**
   k. **Describe keyboard entry including types and features of keyboards.**
   l. **Identify different pointing devices including game controllers and styluses.**
   m. **Describe scanning devices including optical scanners, RFID readers, and recognition devices.**
   n. **Recognize image capturing and audio-input devices.**
   o. **Identify different monitor features and types including flat panels and e-books.**
   p. **Define printing features and types including inkjet and cloud printers.**
   q. **Recognize different audio and video devices including portable media devices.**

r. **Define combination input and output devices including multifunctional devices, telephones, drones, robots, and VR headgear and gloves.**
s. **Explain ergonomics and ways to minimize physical damage.**
t. **Distinguish between primary and secondary storage.**
u. **Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed.**
v. **Describe hard-disk platters, tracks, sectors, cylinders, and head crashes.**
w. **Compare internal and external hard drives.**
x. **Compare performance enhancements including disk caching, RAID, file compression, and file decompression.**
y. **Define optical storage including compact discs, digital versatile discs, and Blu-ray discs.**
z. **Define solid-state storage including solid-state drives, flash memory cards, and USB drives.**
aa. **Define cloud storage and cloud storage services.**
bb. **Describe mass storage, mass storage devices, enterprise storage systems, and storage area networks.**

2. **<u>Learning Activities</u>:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

E. **<u>Unit 5</u>: In this unit you will learn how to identify how information flows within an organization; how to recognize the levels of information systems and how they help businesses make decisions; and understand expert systems and how you can use them to make faster, smarter decisions.**

1. **<u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:**
   a. **Explain the functional view of an organization and describe each function.**
   b. **Describe the management levels and the informational needs for each level in an organization.**
   c. **Describe how information flows within an organization.**
   d. **Describe computer-based information systems.**
   e. **Distinguish among a transaction processing system, a management information system, a decision support system, and an executive support system.**
   f. **Distinguish between office automation systems and knowledge work systems.**

g. **Explain the difference between data workers and knowledge workers.**
h. **Define expert systems and knowledge bases**

2. **<u>Learning Activities</u>:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

F. **<u>Unit 6</u>: In this unit you will learn how to understand the significance of relational, multidimensional, and hierarchical databases; how to identify the right database for an individual, company, distributed, or commercial situation; and how to distinguish between the physical and logical views of data.**

1. **<u>Learning Outcomes</u>: Upon successful completion of this unit the student will be able to:**
   a. **Describe how data is organized: characters, fields, records, tables, and databases.**
   b. **Define key fields and how they are used to integrate data in a database.**
   c. **Define and compare batch processing and real-time processing.**
   d. **Describe databases, including the need for databases and database management systems (DBMSs).**
   e. **Describe the five common database models: hierarchical, network, relational, multidimensional, and object-oriented.**
   f. **Distinguish among individual, company, distributed, and commercial databases.**
   g. **Describe strategic database uses and security concerns**

2. **<u>Learning Activities</u>:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**

G. **<u>Unit 7:</u> In this unit you will learn how and understand the phases of information systems development and avoid confusion, missteps, and inefficiency and**

understand the newest alternatives to the systems life cycle to respond quickly and effectively to unexpected systems design challenges.

1. **Learning Outcomes: Upon successful completion of this unit the student will be able to:**
   a. **Describe the six phases of the systems life cycle.**
   b. **Identify information needs and formulate possible solutions.**
   c. **Analyze existing information systems and evaluate the feasibility of alternative systems.**
   d. **Identify, acquire, and test new system software and hardware.**
   e. **Switch from an existing information system to a new one with minimal risk.**
   f. **Perform system audits and periodic evaluations.**
   g. **Describe prototyping and rapid applications development**

2. **Learning Activities:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **Unit Outline: Follow the sequence of the unit objectives.**

H. **Unit 8: In this unit you will learn about and understand the steps of software development to be prepared to assist or manage software development projects and the differences between assembly, procedural, and natural languages to choose the best language for your needs.**

1. **Learning Outcomes: Upon successful completion of this unit the student will be able to:**
   a. **Define programming and describe the six steps of programming.**
   b. **Compare design tools including top-down design, pseudocode, flowcharts, and logic structures.**
   c. **Describe program testing and the tools for finding and removing errors.**
   d. **Describe CASE tools and object-oriented software development.**
   e. **Explain the five generations of programming languages**

2. **Learning Activities:**
   a. **Instructor will conduct classroom lecture/discussion on the topics listed above. (C5, F5, F11)**
   b. **Student will read assignments on each topic. (C5, F1, F11)**
   c. **Student participation in discussion of each topic. (C7, F6)**
   d. **Student will complete assignments and laboratory hands-on exercises as designated from the course materials. (C8, C19, F9)**

3. **<u>Unit Outline</u>: Follow the sequence of the unit objectives.**