I. INTRODUCTION

A. A study of the components within a computer system. Development of testing and troubleshooting skills.

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. Prerequisite/Co-requisite: COSC 1301 Introduction to Computing or ITSC 1301 Introduction to Computers.

II. LEARNING OUTCOMES

Upon successful completion of this course, Computer Systems Maintenance, the student will be able to:

A. Describe the functions of components in a computer system. (C5, C6, C7, C8, C15, C19, F1, F2, F6, F10)

B. Use computer related test equipment. (C5, C6, C8, C15, C16, C18, C19, C20, F1, F2, F8, F9, F10, F16)

C. Demonstrate the effective use of maintenance tools. (C1, C5, C6, C8, C15, C16, C18, C19, C20, F1, F2, F8, F9, F10)

III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books
B. Lecture Classes may also require a 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:
   - Exercises
   - Quizzes
   - Final Assessment

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 see 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 COMPUTATIONS

<table>
<thead>
<tr>
<th>Course Requirements</th>
<th>Points</th>
<th>Points</th>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson Exercises</td>
<td>500</td>
<td>900-1000</td>
<td>A-Superior</td>
<td>4</td>
</tr>
<tr>
<td>Lesson Quizzes</td>
<td>200</td>
<td>800-899</td>
<td>B-Above Average</td>
<td>3</td>
</tr>
</tbody>
</table>
VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

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 for Withdrawal (CTC Form 59). The student must sign the withdrawal form.

CTC Form 59 will be accepted at any time prior to Friday of the 12th week of classes during the 16-week fall and spring semesters. The deadline for sessions of 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 Schedule Bulletin.

For non-GoArmyEd active military students, the effective date of withdrawal is the filing date with the Education Center. For all other students, the effective date of withdrawal is the date that the withdrawal application is received by the Central Texas College representative.

Students who used financial aid, military tuition assistance, VA benefits, or other non-personal funds may be required to repay tuition and fees to the funding agency. For specific repayment requirements, contact the Office of Student Financial Aid or Veterans Services Office before withdrawing. Military tuition assistance students should visit their military Education Center or Navy College Office.

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 a grade of “F,” “FI,” “FN,” “IP,” or “XN.”

B. Instructor Initiated Withdrawals: Faculty are authorized to withdraw students who are not making satisfactory course progress to include failure to meet College
attendance requirements as outlined in the section of the Catalog entitled “Satisfactory Progress Standards.” The instructor will assign the appropriate grade on CTC Form 59 for submission to the registrar.

Students enrolled in distance learning courses are expected to maintain constant progress throughout the course. Failure to do so may result in the student being administratively withdrawn by the instructor.

Students who have not attended class by the 12th class day of a 16-week course or the 6th class day of an 8-week term may be administratively withdrawn by the instructor with a grade of "W." Students may be administratively withdrawn from any class when their absences reach a total equal to 12.5% of the class hours for the course; and in the opinion of the instructor, the student cannot satisfactorily complete the course. An example: Students attending a 48-hour class during an 8-week period normally meet 180 minutes each session for 16 sessions. Those students accumulating two (2) unexcused absences are subject to Administrative Withdrawal since the total unexcused absences equal 12.5% of class hours for the course. Those students attending a 48 hour class during a 16-week period normally meet 90 minutes each session for 32 sessions. Those students accumulating four (4) unexcused absences are subject to Administrative Withdrawal since the total unexcused absences equals 12.5% of class hours for the course. In a distance learning course the last date of attendance is the last activity by the student in the course.

C. Administrative Withdrawal: A student may be administratively withdrawn by a designated member of the administrative staff of the College when the student has been placed on Academic Suspension or Disciplinary Suspension; the student has an outstanding financial obligation owed to the college; or the student registered for a course without the required prerequisite or departmental permission.

The College is under no obligation to refund tuition and fees, or other costs associated with an administrative or instructor initiated withdrawal.

D. Incomplete Grade: The College catalog states, “An incomplete grade may be given in those cases where the student has completed the majority of the coursework 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.

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

F. 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.

G. **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.

H. **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.

I. **Degree Progression:** Students who receive a grade of “D” are advised not to enroll in the next course for which this course was a prerequisite.

J. **Failing Grade:** The grade of “F” or “FN” will be given for academic failure, non-attendance or scholastic dishonesty.

K. **Scholastic Honesty:** All students are expected to maintain the highest standards of scholastic honesty in the preparation of all course work and during examinations. The college policy on scholastic honesty, including definitions on plagiarism, collusion, and cheating can be found at the following URL: [http://online.ctcd.edu/plagiarism.cfm](http://online.ctcd.edu/plagiarism.cfm)
VIII. COURSE OUTLINE

A. Lesson One: Computer Components and Computer Tools

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   a. Identify the components inside a computer (C5, C6)
   b. Describe how to protect yourself from the dangers of electricity (C5, C15, F8)
   c. Identify tools needed for PC repair (C5, C15, C18, F10)
   d. Demonstrate disassembly and reassembly of a PC (C5, C18, C19, C20, F8, F9)
   e. Discuss methods of PC cooling (C5, C7, C15, C17, C18, C19, F1)
   f. Select a power supply that meets the system needs (C5, C7, C15, C17, C18, C19, F1)

2. Learning Activities:
   a. Read Chapters 1 and 2 in the textbook
   b. Review the PowerPoint presentation for Chapters 1 and 2
   c. Complete Chapter 1 and 2 Assignments
   d. Complete Quiz 1

3. Unit Outline: Follows the sequence of Lesson Objectives

B. Lesson Two: Windows Operating Systems and Motherboards

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   a. Describe how operating systems interface with users, files and folders, applications, and hardware (C7, C8, C15, F1)
   b. Identify the various tools that you can use to examine and support the system (C5, C15, C18, F10)
   c. Describe the various types and features of motherboards (C5, C7, C8, C15, F1)
   d. Describe how to use the BIOS to configure the motherboard (C7, C8, C15, F1)
   e. Describe how to maintain the motherboard (C7, C8, C15, F1)
   f. Select, install, and replace a motherboard (C5, C7, C15, C17, C18, C19, F1)

2. Learning Activities:
   a. Read the Chapters 3 and 4 in the textbook
   b. Review the PowerPoint presentation for Chapters 3 and 4
   c. Complete Chapter 3 Real Problem 3-1
   d. Complete Chapter 4 Hands-On Exercise 4-1
3. **Unit Outline**: Follows the sequence of Lesson Objectives

**C. Lesson Three: Processors, Memory, and Hard Drives**

1. **Learning Outcomes**: Upon successful completion of this unit, the student will be able to:
   a. Describe the characteristics and purposes of the processors used in PCs (C5, C7, C8, C15, F1)
   b. Describe how to install and upgrade a processor (C5, C7, C8, C15, F1)
   c. Describe the different kinds of physical memory and how they work (C5, C7, C8, C15, F1)
   d. Describe how to upgrade memory (C5, C7, C8, C15, C18, C19, F1)
   e. Compare hard drive technologies (C5, C7, C8, C15, F1)
   f. Select and install a hard drive (C5, C7, C8, C15, C18, C19, F1)
   g. Describe tape drives and floppy drives (C5, C7, C8, C15, F1)

2. **Learning Activities**:
   a. Read the assigned chapter(s) in the textbook
   b. Review the PowerPoint presentation(s)
   c. Complete Chapter 5 Hands-On Exercise 5-1
   d. Complete Chapter 6 Real Problem 6-2
   e. Complete Quiz 3

3. **Unit Outline**: Follows the sequence of Lesson Objectives

**D. Lesson Four: Installing Windows, Storage Devices, and I/O Peripherals**

1. **Learning Outcomes**: Upon successful completion of this unit, the student will be able to:
   a. Describe how to plan a Windows installation (C5, C7, C8, C15, C18, C19, F1)
   b. Describe how to install Windows 10 (C5, C7, C8, C15, C16, C17, C18, C19, F1)
   c. Analyze problems that may occur after the installation is complete (C5, C7, C8, C15, C18, C19, F1)
   d. Describe special concerns when installing Windows in an enterprise (C5, C7, C8, C15, C18, C19, F1)
   e. Describe the types and characteristics of I/O devices (C5, C7, C8, C15, C18, C19, F1)
   f. Demonstrate how to install and maintain I/O devices (C5, C7, C8, C15, C18, C19, C20, F1, F9, F10)
g. Identify different types of mass storage devices (C5, C7, C8, C15, C16, C18, C19, F1)
h. Examine the installation and maintenance of mass storage devices (C5, C7, C8, C15, C18, C19, C20, F1, F9, F10)
i. Describe how to support optical drives and flash memory devices (C5, C7, C8, C15, C18, C19, F1)

2. **Learning Activities:**
   a. Read Chapters 7 and 8 in the textbook
   b. Review the PowerPoint presentation for Chapter 7 and 8
   c. Complete Chapter 7 Hands-On Exercise 7-4
   d. Complete Chapter 8 Hands-On Exercise 8-2
   e. Complete Quiz 4

3. **Unit Outline:** Follows the sequence of Lesson Objectives

E. **Lesson Five: Maintaining and Optimizing Windows**

1. **Learning Outcomes:** Upon successful completion of this unit, the student will be able to:
   a. Perform scheduled preventative maintenance (C1, C6, C8, C15, C16, C19, C20, F1, F2, F9, F10)
   b. Describe how to prepare for disaster (C5, C7, C8, C15, C18, C19, F1)
   c. Perform file and folder maintenance (C1, C6, C8, C15, C16, C19, C20, F1, F2, F9, F10)
   d. Describe how to configure Windows to use a language other than English (C5, C7, C8, C15, C18, C19, F1)
   e. Use Windows utilities to solve problems with Windows (C5, C8, C15, C16, C18, C19, C20, F1, F8, F9, F10)
   f. Describe how to optimize Windows to improve performance (C5, C7, C8, C15, C18, C19, F1)
   g. Manually remove software (C5, C8, C15, C16, C18, C19, C20, F1, F8, F9, F10)

2. **Learning Activities:**
   a. Read the Chapters 10 and 11 in the textbook
   b. Review the PowerPoint presentations for Chapters 10 and 11
   c. Complete Chapter 10 Hands-On Exercise 10-1
   d. Complete Chapter 11 Hands-On Exercise 11-4
   e. Complete Quiz 5

3. **Unit Outline:** Follows the sequence of Lesson Objectives
F. **Lesson Six:** Troubleshooting Windows, Windows Startup, and Hardware Problems

1. **Learning Outcomes:** Upon successful completion of this unit, the student will be able to:
   a. Identify Windows tools to help with troubleshooting Windows and application problems (C5, C7, C8, C15, C16, C18, C19, F1)
   b. Create general strategies and steps for troubleshooting computer problems (C1, C5, C6, C8, C15, C16, C17, C18, C19, C20, F1, F2, F8, F9, F10)
   c. Troubleshoot blue screen stop errors and improper shutdowns (C1, C6, C8, C15, C16, C19, C20, F1, F2, F9, F10)
   d. Troubleshoot boot-related hardware problems (C1, C6, C8, C15, C16, C19, C20, F1, F2, F9, F10)
   e. Troubleshoot error messages that occur during the POST (C1, C6, C8, C15, C16, C19, C20, F1, F2, F9, F10)
   f. Describe how to troubleshoot hard drive problems (C5, C7, C8, C15, C16, C19, F1)
   g. Identify methods to protect a computer and the environment (C5, C7, C8, C15, C16, C18, C19, F1)
   h. Identify Windows tools useful to solve problems caused by hardware, applications, and failed Windows components (C5, C7, C8, C15, C16, C18, C19, F1)
   i. Select Windows tools that can help with start-up problems (C5, C7, C8, C15, C16, C18, C19, F1)
   j. Describe the Windows boot process (C5, C7, C8, C15, C16, C19, F1)
   k. Identify Windows tools that can help when solving Windows startup problems (C5, C7, C8, C15, C16, C18, C19, F1)
   l. Explain how to troubleshoot Windows start-up problems (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)

2. **Learning Activities:**
   a. Read the assigned chapter(s) in the textbook
   b. Review the PowerPoint presentation(s)
   c. Complete Chapter 12 Hands-On Exercise 12-4
   d. Complete Chapter 13 Hands-On Exercise 13-2
   e. Complete Chapter 14 Hands-On Exercise 14-1

3. **Unit Outline:** Follows the sequence of Lesson Objectives

G. **Lesson Seven:** Networks and Security Strategies

1. **Learning Outcomes:** Upon successful completion of this unit, the student will be able to:
   a. Discuss networking protocols used by Windows (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)
b. Connect a computer to a network (c1, C5, C6, C7, C8, C15, C16, C17, C18, C19, F1, F2, F8, F9)
c. Discuss hardware devices used for networking (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)
d. Describe the different types of networks (C5, C7, C8, C15, C18, C19, F1)
e. Select the tools used to build a local area network (C5, C7, C8, C15, C18, F1)
f. Describe how to setup and troubleshoot the cabling in a network (C5, C7, C8, C15, C18, C19, F1)
g. Discuss how to support some client/server applications (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)
h. Discuss how to share secure files and folders on a network (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)
i. Describe how to troubleshoot network connections (C5, C7, C8, C15, C18, C19, F1)
j. Formulate a procedure to secure a Windows workstation (C1, C5, C6, C8, C15, C16, C17, C18, C19, C20, F1, F2, F8, F9, F10)
k. Describe how to authenticate a computer for network access (C5, C7, C8, C15, C18, C19, F1)
l. Identify, remove, and protect against malicious software (C5, C7, C8, C15, C16, C18, C19, F1)

2. Learning Activities:
   a. Read Chapters 15, 16, 17, and 18 in the textbook
   b. Review the PowerPoint presentations for Chapters 15, 16, 17, and 18
   c. Complete Chapter 15 Real Problem 15-1
   d. Complete Chapter 16 Real Problem 16-1
   e. Complete Chapter 17 Hands-On Exercise 17-1
   f. Complete Chapter 18 Hands-On Exercise 18-2
   g. Complete Quiz 7

3. Unit Outline: Follows the sequence of Lesson Objectives

H. Lesson Eight: Notebooks, Mobile Devices, and Printers

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   a. List special considerations when supporting notebooks (C1, C5, C6, C8, C15, C16, C17, C18, C19, C20, F1, F2, F8, F9, F10)
   b. Describe how to configure, optimize, and troubleshoot notebooks (C5, C7, C8, C15, C18, C19, F1)
   c. Describe how to upgrade internal components in a notebook or all-in-one computer (C5, C7, C8, C15, C18, C19, F1)
   d. Describe how to troubleshoot hardware problems in a notebook (C5, C7, C8, C15, C18, C19, F1)
e. Discuss operating systems used with mobile devices (C5, C7, C8, C15, C16, C18, C19, F1, F2, F6)
f. Describe how to configure, synchronize, and troubleshoot mobile devices (C5, C7, C8, C15, C18, C19, F1)
g. Describe printer types and features (C5, C7, C8, C15, C18, C19, F1)
h. Describe how to install and share printers (C5, C7, C8, C15, C18, C19, F1)
i. Describe routine preventive maintenance (C5, C7, C8, C15, C18, C19, F1)
j. Implement procedures needed to troubleshoot printer problems (C1, C5, C8, C15, C16, C18, C19, C20, F1, F8, F9, F10)

2. Learning Activities:
   a. Read Chapters 19, 20, and 21 in the textbook
   b. Review the PowerPoint presentations for Chapters 19, 20, and 21
   c. Complete Chapter 19 Real Problem 19-5
   d. Complete Chapter 20 Hands-On Exercise 20-3
   e. Complete Chapter 21 Real Problem Exercise 21-1
   f. Complete Quiz 8

3. Unit Outline: Follows the sequence of Lesson Objectives