I. INTRODUCTION

A. This course covers the skills necessary to install, configure, and administer Network Directory service. Topics include the logical and physical structure of directory services; configuration of the Domain Name System (DNS) server service to support directory services; the creation and administration of user accounts and group resources; the delegation and administration control of directory objects; and the maintenance and restoration of the directory database.

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: Twelve (12) Hours of Computer Science Courses.

II. LEARNING OUTCOMES

Upon successful completion of this course, Implementing Network Directory Services the student will be able to:

A. Identify and describe the logical and physical structure of directory services (C3, C4, C5, C7, C11)

B. Configure the Domain Name System (DNS) server service to support directory services (C7, C8, C9, F2, F8, F9, F16)

C. Create and administer user accounts and group resources (C1, C5, C6, C7, C15, C16, C17, C8, C11, C12, C13, C14, F5, F6, F8, F9, F16)

D. Delegate and administer control of directory objects. (C1, C5, C6, C7, C8, C15, F5, F6, F8, F9, F16)

E. Maintain and restore the directory database. (C5, C6, C7, C8, C11, C15, C17, C18, C19, F1, F2, F4, F5, F8, F9, F16)
III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books
   b. Access to LabConnection bundled with text.

B. Lecture Classes also require at least one USB storage device (4 GB preferred). 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:
   • Assignments (homework, in class assignments, etc.)
   • Assessments (midterm exam, quizzes, projects, etc.)
   • Final Assessment (final exam and/or semester project, participation)

B. Scheduled and unscheduled assessments will be given at the discretion of the instructor. There is no make-up for these (see IV.C. above).

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

D. A student must take all exams/assessments. 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 the missed work.
VI. SEMESTER GRADE COMPUTATION

<table>
<thead>
<tr>
<th>Course</th>
<th>Point</th>
<th>Points</th>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments/Quizzes</td>
<td>300</td>
<td>900-1000</td>
<td>A-Superior</td>
<td>4</td>
</tr>
<tr>
<td>Midterm Assessment</td>
<td>300</td>
<td>800-899</td>
<td>B-Above Average</td>
<td>3</td>
</tr>
<tr>
<td>Final Assessment</td>
<td>400</td>
<td>700-799</td>
<td>C-Average</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
<td>600-699</td>
<td>D-Passing, but unsatisfactory</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-599</td>
<td>F-Failure</td>
<td>0</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 also be administratively withdrawn from any class when their absences exceed a total of four class meetings for a 16-week course or three class meetings for less than 16-week courses and; in the opinion of the instructor, the student cannot satisfactorily complete 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 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 a “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
VIII. COURSE OUTLINE

A. Unit One: Introduction of course requirements and objectives and deploying Windows Server.

1. **Learning Outcomes:** Upon completion of this unit, the student will be able to locate information required by the course and present it in an appropriate manner.

2. **Learning Activities:**
   a. Read syllabus. (C5, C6, F1, F5)
   b. Read and analyze assignment requirements. (C5, C6, F1, F5)
   c. Describe the Windows Deployment Services process (C5, C18, C19 C20, F1, F8, F9)
   d. Analyze and evaluate situations in which the Windows Deployment Services is used (C5, C18, C19 C20, F1, F8, F9)
   e. Install and configure the Windows Deployment Services role (C5, C18, C19 C20, F1, F8, F9)
   f. Work with Windows Deployment Services images (C5, C18, C19 C20, F1, F8, F9)
   g. Configure DHCP for Windows Deployment Services (C5, C18, C19 C20, F1, F8, F9)

3. **Unit Outline:**
   a. Discuss Course objectives and requirements
   b. Discuss Course activities and grading
   c. Describe assignment and presentation requirements
   d. Describe sources of other information, particularly the college library and Internet
   e. Explain the purpose and value of Windows Deployment Services (WDS) including the ability to deploy and partially configure operating systems onto multiple computers remotely, rather than manually. Note the list of applicable OSs.
   f. Describe situations in which WDS is used
   g. Install and configure the WDS role
   h. Employ WDS images
   i. Configure DHCP for WDS
   j. Review the terms and functions of the Dynamic Host Configuration Protocol (DHCP), Active Directory and the Domain Name System (DNS)

B. Unit Two: Windows Server Update Services and Advanced File Services Configuration

1. **Learning Outcomes:** Describe processes needed to deploy updates, patches and fixes to computers using WSUS and harness the power of connected
servers through DFS configuration.

2. Learning Activities:
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. Unit Outline:
   a. Describe Windows Server Update Services (WSUS) (C5, C6, F1, F5)
   b. Install the WSUS role (C5, C18, C19 C20, F1, F8, F9)
   c. Perform initial WSUS configuration (C5, C6, F1, F5)
   d. Configure WSUS synchronization and approval rules (C5, C6, F1, F5)
   e. Analyze additional WSUS configuration tasks (C5, C6, C19, F1, F5)
   f. Configure Distributed File System servers (C5, C6, C19, F1, F5)
   g. Configure the File Server Resource Manager role service (C5, C6, C19, F1, F5)
   h. Configure file and disk encryption (C5, C6, C19, F1, F5)

C. Unit Three: Server Monitoring and Auditing and Remote Access Configuration

1. Learning Outcomes: An introduction to the tools available to monitor server performance and resource usage, trouble-shooting guidance, including methods to investigate audit results and address security issues. For offsite administration an introduction to installing and configuring the Remote Access server role including Virtual Private Network (VPN) set-up and Direct Access is presented.

2. Learning Activities:
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. Unit Outline:
   a. Monitoring of Windows Server events (C5, C6, C16, F1, F5)
   b. Configuration necessary to perform network monitoring (C5, C6, C19, F1, F5)
   c. Auditing techniques to improve network security (C5, C6, C19, F1, F5)
   d. Analysis of remote access (C5, C6, F1, F5)
   e. Installation and configuration of Remote Access server role (C5, C6, C19, F1, F5)
   f. Configuration of DirectAccess role service (C5, C6, C19, F1, F5)
D. Unit Four: Network Policy Configuration

1. Learning Outcomes: This unit focuses on Network Policy Server and Network Access Protection. Specifically presented are the Remote Authentication Dial in User Service (RADIUS) standard, Network Access Protection (NAP) network and connection policies, health policies and remediation, and how to configure and apply the policies.

2. Learning Activities:
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. Unit Outline:
   a. Compare and contrast the components and flow of Network Policy Server (F1, F2, F9, F10)
   b. Configure RADIUS (C6, C8, C19, F1, F2)
   c. Configure Network Access Protection (NAP) (C6, C8, C19, F1, F2, F8)

E. Unit Five: Domain Controller and Active Directory Management

1. Learning Outcomes: This unit explores the important of Domain Controllers (DCs) in a network. Topology is discussed, with the need to design fault tolerance via cloning. Read Only Domain Controllers (RODCs) are defined with examples of configuration and use. Replication between sites is addressed, as is operations master roles. The unit concludes with a section on Active Directory (AD) maintenance, addressing failure recovery, backups, and snapshots.

2. Learning Activities:
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. Unit Outline:
   a. Analyze Active Directory key concepts and components (C1, C3, C5, C6, C19, F2, F5)
   b. Clone a virtual domain controller (C1, C3, C5, C6, C8, C13, C19, C20, F2, F5)
   c. Configure a Read Only Domain Controller (RODC) (C1, C3, C5, C6, C13, C19, C20, F2, F5)
   d. Configure sites (C1, C3, C5, C6, C13, C19, C20, F2, F5)
   e. Use operations master roles (C1, C3, C5, C6, C13, C19, C20, F2, F5)
   f. Maintain Active Directory (C1, C3, C5, C6, C13, C19, C20, F2, F5)
F. **Unit Six:** User and Service Account Configuration and Group Policy Settings and Preferences

1. **Learning Outcomes:** This unit joins Group Policy Objects and Active Directory and provides a framework for establishing user account policies. A mechanism for exceptions is explored, while keeping security concerns at the forefront. Configuring services to authenticate on single or multiple servers environments is also explained. Additionally review of GPOs introduces students to the complexity of GPO management. With exercises repeatedly using the Group Policy Management Editor (GPME), students learn how GPOs can be configured to install software, deploy scripts, and establish folder redirection. Detailed also are administrative templates, security templates, and group policy preferences.

2. **Learning Activities:**
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. **Unit Outline:**
   a. Configure user accounts and group policies (C5, C6, C8, C19, F1, F5)
   b. Configure account policies (C5, C6, C8, C19, F1, F5)
   c. Create password setting objects (C5, C6, C15, C16, C19)
   d. Work with service accounts (C5, C6, C15, C16, C17, C19)
   e. Analyze the function of Group Policy (C5, C6, C15, C16, C17, C19)
   f. Configure group policy settings (C5, C6, C15, C16, C17, C19)
   g. Work with administrative and security templates (C5, C6, C15, C16, C17, C19)
   h. Configure group policy preferences (C5, C6, C15, C16, C17, C19)

G. **Unit Seven:** Managing Group Policies

1. **Learning Outcomes:** Upon completion of this unit, students will be able to managing GPOs. Specifically students learn about scope and precedence, inheritance, and processing order. Exceptions to the defaults, along with advanced configuration, are identified. Tools are examined to determine if processing is successful and to provide greater ability for backups and
migation.

2. **Learning Activities:**
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. **Unit Outline:**
   a. Configure group policy scope, precedence, and inheritance (C5, C6, C19, F1, F5)
   b. Configure group policy client processing (C5, C6, C19, F1, F5)
   c. Configure Group Policy Results and Group Policy Modeling tools (C5, C6, C19, F1, F5)
   d. Manage GPOs (C5, C6, C19, F1, F5)

H. **Unit Eight: Managing and Configuring Domain Name System (DNS)**

1. **Learning Outcomes:** This unit introduces DNS functionality and management. Students learn the processes that translate computer and domain names to addresses, and vice versa. Zones and their many attributes are explained, along with the array of parameters and settings that affect communication between them. Various record types are defined and their uses discussed. Zone transfer and replication are examined, particularly citing the benefits of Active Directory integration. The load-balancing benefit of round-robin DNS is also covered.

2. **Learning Activities:**
   a. Lecture and discussion. (C5, C6, F1, F5)
   b. Hands-on lab activities. (C5, C6, F1, F5, F6, F15)
   c. Quizzes. (F17, F1, F2, C7, C4)

3. **Unit Outline:**
   a. Analyze the DNS (C5, C6, C17, C18, C19, F1, F5)
   b. Configure DNS zones. (C1, C2, C19)
   c. Configure DNS resource records (C5, C6, C19, F1, F5)
   d. Manage zones (C5, C6, C19, F1, F5)
   e. Configure zone storage (C1, C4, C8, C19)
   f. Configure round-robin DNS (C5, C6, C19, F1, F5)