I. INTRODUCTION

A. Advanced concepts in the designing, installing, and administration of an Internet/Intranet server. This course presents advanced concepts needed to design, install, configure, maintain, and administer an Internet/Intranet.

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: ITNW 1316 Network Administration, ITNW 1345 Implementing Network Directory Services, and ITNW 1353 Supporting a Network Server Infrastructure.

II. LEARNING OUTCOMES

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

A. Design and establish domain relationships (C5, C6, C8, C15, F1, F8, F10)
B. Implement internal and external security (C5, C6, C8, C15, C16, C17, C18, F1, F8, F9)
C. Install and configure network services (C18, C19, C20, F1)
D. Maintain an existing server (C5, C6, C15, F1)
E. Design, install, and administer a Private Cloud (C18, C19, C20, F1)
F. Configure hardware components and applications (C18, C19, C20, F1)
G. Configure and optimize clients in multiple environments (C5, C6, C15, C16, C17, C18, C19, C20, F1, F7,8, F9, F10)
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. 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

<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>Assignments</td>
<td>300</td>
<td>900-1000</td>
<td>A-Superior</td>
<td>4</td>
</tr>
<tr>
<td>Assessments</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>
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<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. 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.cted.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. **Lesson Zero:** Introduce course requirements and objectives. Introduce student to lab and use of equipment and/or software.

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to apply course requirements as defined in the syllabus and reviewed by the instructor

2. **Learning Activities:** 
   a. Read the orientation information and the course syllabus, attendance, assignments, grading, exams/assessments, etc. (C3, C5, F1, F9, F10, F13)
   b. Read and discuss Organization of the Textbook, Preface. (C1, C5, C8, C18, F1, F9, F10)
   c. Familiarize with lab equipment and/or online course delivery platforms. (C3, C5, C8, C15, C18, F1)

3. **Unit Outline:**
   a. Cover and discuss syllabus.
   b. Cover Rules and Requirements, projects and due dates for this course.
   c. Introduce students to lab equipment.

B. **Lesson One:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   a. Describe the architecture
   b. Identify the hardware requirements
   c. Describe the software requirements
   d. Create the management server

2. **Learning Activities:** 
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**
   a. Cloud Architecture
   b. Computer Hardware Requirements
   c. Computer Software Requirements
   d. Planning the management Server
C. **Lesson Two:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   a. Prepare the Hyper-V Evaluator
   b. Create virtual hard disks
   c. Create virtual network switches
   d. Create and Prepare virtual machines
   e. Prepare virtual machines

2. **Learning Activities:**
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**
   a. Applying Hyper-V Evaluator
   b. Creating Virtual Disks
   c. Creating Virtual Networks
   d. Creating and Preparing Virtual Machines

D. **Lesson Three:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   a. Evaluate the Hyper-V server
   b. Support the performance of the Hyper-V environment
   c. Apply snapshots in a test environment
   d. Organize virtual machines
   e. Summarize Hyper-V

2. **Learning Activities:**
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**
   a. Organizing the Hyper-V Server
   b. Recording Performance of the Hyper-V Server
   c. Developing Snapshots in a Test Environment
   d. Planning Virtual Machines
   e. Identifying Hyper-V
E. **Lesson Four:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   a. Describe Virtual Machine Evaluator components
   b. Describe Virtual Machine Evaluator architecture
   c. Identify requirements for Virtual Machine Evaluator
   d. Produce and Prepare a Virtual Machine Evaluator server
   e. Construct with the Virtual Machine Evaluator administrator console
   f. Construct with the VMM library
   g. Deploy a virtual machine
   h. Construct and convert machines

2. **Learning Activities:**
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**
   a. Describing Virtual Machine Evaluator Components
   b. VMM Architecture
   c. Identifying Requirements for Virtual Machine Evaluator
   d. Planning and Preparing a Virtual Machine Evaluator Server
   e. Developing with the VMM Administrator Console
   f. Developing with the Library
   g. Constructing Virtual Machines
   h. Migrating and Converting Machines

F. **Lesson Five:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:
   a. Produce the self-service portal
   b. Prepare Producer roles for the self-service portal
   c. Evaluate virtual machines with the self-service portal
   d. Produce virtual LANs
   e. Evaluate the self-service portal

2. **Learning Activities:**
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**
   a. Planning the Self-Service Portal
b. Preparing Producer Roles for the Self-Service Portal  
c. Evaluating Virtual Machines with the Self-Service Portal  
d. Developing Virtual LANs  
e. Evaluating the Self-Service Portal

G. **Lesson Six:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:  
   a. Describe the remote Virtual Desktop Infrastructure (VDI)  
   b. Produce components for the VDI  
   c. Prepare personal virtual desktops  
   d. Prepare roaming profiles and folder redirection

2. **Learning Activities:**  
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)  
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**  
   a. Describing Remote Virtual Desktop Infrastructure (VDI)  
   b. Planning VDI Components  
   c. Preparing Personal Virtual Desktops  
   d. Developing Virtual Machine Pools  
   e. Preparing Roaming Profiles and Folder Redirection

H. **Lesson Seven:**

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:  
   a. Describe high availability  
   b. Prepare iSCSI targets and clients  
   c. Recognize a cluster  
   d. Prepare failover clustering  
   e. Define a cluster shared volume

2. **Learning Activities:**  
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)  
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)

3. **Unit Outline:**  
   a. High Availability  
   b. Preparing iSCSI Targets and Clients
c. Preparing Failover Clustering  
d. Enabling a Cluster Shared Volume  

I. Lesson Eight:  

1. **Learning Outcomes:** Upon successful completion of this lesson the student will be able to:  
   a. Evaluate high-availability clusters  
   b. Construct virtual machines  
   c. Create and recover the VMM environment  
   d. Evaluate high-availability clusters  
   e. Describe the PowerShell environment  
   f. Produce the Hyper-V PowerShell Management Library  
   g. Evaluate virtual machines with PowerShell  
   h. Create scripts to Evaluate  

2. **Learning Activities:**  
   a. Participate in collaborative discussions based on the assigned reading materials. (C9,C12,C14,F1, F2, F5, F6)  
   b. Submit assigned exercises. (C5, C6, C8, F1, F2, F7, F9, F11)  

3. **Unit Outline:**  
   a. Recording High-Availability Clusters  
   b. Migrating Storage and Virtual Machines  
   c. Backing up and Recovering the VMM Environment  
   d. Backing up the VMM Server  
   e. Evaluating High-Availability Clusters  
   f. Describing the PowerShell Environment  
   g. Planning the PowerShell Management Library for Hyper-V  
   h. Evaluating Virtual Machines with the Hyper-V Management Library  
   i. Creating Scripts to Evaluate