



Course Outline

2026-2027 Catalog

CSCI 76 - Windows Hybrid Infrastructure and Services

Catalog Description

Transfer Status: CSU

Prerequisite: CSCI 49 or Current A+ Certification or Department approval

Unit(s): 3.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 85.00 Contact hours/68.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This course prepares students to configure advanced Windows Server services using on-premises, hybrid, and cloud technologies. Students will gain expertise in implementing and managing on-premises and hybrid solutions, including performing tasks related to security, migration, monitoring, high availability, troubleshooting, and disaster recovery. They will deploy, manage and secure Active Directory on-premises and in the cloud, manage server workloads and network infrastructure in a hybrid environment. Students will use administrative tools and technologies, such as Windows Admin Center, PowerShell, Azure Arc, Azure Automation Update Management, Microsoft Defender for Identity, Azure Security Center, Azure Migrate, and Azure Monitor.

Objectives

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

1. Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments.
2. Manage Windows Servers and Workloads in a Hybrid Environment
3. Manage Virtual Machines and Containers
4. Implement and Manage an On-premises and Hybrid Networking Infrastructure
5. Manage Storage and File Services
6. Secure Windows Server On-premises and Hybrid Infrastructures
7. Implement and Manage Windows Server High Availability
8. Implement Disaster Recovery
9. Migrate Servers and Workloads
10. Monitor and Troubleshoot Windows Server Environments

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Deploy, configure, and manage Active Directory Domain Services, Identities, and Security Principals in a multi-site, multi-domain, and multi-forest hybrid environment	4.00
Manage Windows Servers and Workloads in a Hybrid Environment	3.00
Create and manage Hyper-V and guest virtual machines, containers, and Azure Virtual machines running Windows Server	4.00
Implement and manage on-premise and hybrid name resolution, IP addressing, and network connectivity	4.00
Manage Azure File Sync, Windows File Shares, and Windows Server storage	3.00
Secure Windows Server OS, hybrid Active Directory infrastructure, Azure services, storage and networking	2.00
Implement and Manage Windows Server Failover Clusters and Storage Spaces Direct	3.00
Manage Backup and Recovery, Protect VMs using Hyper-V Replicas, and Implement Disaster Recovery using Azure Site Recovery	3.00
Upgrade and Migrate On-premises Servers, Storage, Workloads to Azure	4.00
Monitor and Troubleshoot Active Directory and on-premise, hybrid, and Azure VMs in Windows Server environments using Windows Server Tools and Azure services	4.00
Total Hours: 34.00	

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Deploy, configure, and manage Active Directory Domain Services, Identities, and security principals in a multi-site, multi-domain, and multi-forest hybrid	6.00
Manage Windows Servers and Workloads in a Hybrid Environment	5.00
Create and manage Hyper-V and guest virtual machines, containers, and Azure Virtual machines running Windows Server	6.00
Implement and manage on-premise and hybrid name resolution, IP addressing, and network connectivity	5.00

Topics	Lab Hrs
Manage Azure File Synch, Windows File Shares and Windows server storage	5.00
Secure Windows Server OS, hybrid Active Directory infrastructure, Azure services, storage and networking	4.00
Implement and Manage Windows Server Failover Clusters and Storage Spaces Direct	5.00
Manage Backup and Recovery, Protect VMs using Hyper-V Replicas, and Implement Disaster Recovery using Azure Site Recovery	5.00
Upgrade and Migrate On-premises Servers, Storage, Workloads to Azure	5.00
Monitor and Troubleshoot Active Directory and on-premise, hybrid, and Azure VMs in Windows Server environments using Windows Server Tools and Azure services	5.00
Total Hours: 51.00	

Methods of Instruction

- A. Demonstrations
- B. Discussion
- C. Guest Speakers
- D. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- E. Multimedia Presentations
- F. Reading Assignments

Methods of Evaluation

- A. Exams/Tests
- B. Projects
- C. Lab Projects
- D. Mid-term and final examinations
- E. Essays and research papers
- F. Group Participation

Examples of Assignments

Reading Assignments

1. Read: Monitor and maintain Windows Server IaaS Virtual Machine, Administer and manage Windows Server IaaS Virtual Machine remotely. Be prepared to discuss with the class the different remote administration tools and the one you think will be most beneficial and easiest to use for remote administration.
2. Read about Azure's High Availability and geo-replication services. Discuss with the class some specific examples of business models where geo-replication could prevent a critical loss.

Writing Assignments

1. Write a 2 page business proposal for a new business that is debating between on-premise infrastructure, and Azure IaaS. List the pros and cons of each option.
2. Write a 1 page essay on how Kubernetes and Docker have revolutionized deployment tasks.

Out-of-Class Assignments

1. Complete the Microsoft Learn Active Directory Domain Services module. Be prepared to discuss any challenges you had with the class.
2. Log into the Azure Portal and deploy a Windows Server Active Directory Domain Services (A.D.D.S.) VM. Deploy Azure A.D.D.S. SaaS. Write a 2 paragraph essay comparing the ease of deployment between the two methods.

Recommended Materials of Instruction

Other Learning Materials

Online content through <https://docs.microsoft.com/> MS Learn and Azure Portal

Minimum Qualifications

Computer Information Systems
 Computer Service Technology
 Computer Science (Masters Required)

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