

ITS 212 Network OS Server

Rubric: ITS

Term: Fall 2023

Number: 212

Lecture: N/A

Section: 50

Lab: N/A

CRN: 73613

Instructor Information

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Office Hours (or by appointment):

Day	Hours
Monday	10-11AM
Tuesday	By Appointment
Wednesday	10-11AM
Thursday	11-Noon
Friday	By Appointment

Course Description

This course covers server technologies commonly used in local area networking. Topics include installation, administration, storage, application services, network services, security, reliability, and availability.

Aligns with CAE KU:

- Foundational – IT Systems Components
- TC: Operating System Concepts

Course Outcomes

- Describe the hardware components of modern computing environments and their individual functions
- Describe the basic security implications of modern computing environments.
- Understand the Federal, State and Local Cyber Defense partners/structures
- Properly use the Vocabulary associated with cybersecurity
- Describe the role and basic functions of an operating system, and how operating systems interact with hardware and software applications
- Describe the role and basic functions of an operating system and how operating systems interact with hardware and software applications
- Identify and describe basic security issues of operating systems

Topics Covered:

Unit	Reading	KU Topics	Labs
Computer Networks and Servers	<ul style="list-style-type: none"> • https://www.oercommons.org/courses/local-area-networks/view • Moodle Topic 1 • Dauti, Chapter 1 	<ul style="list-style-type: none"> • System Architectures— Cloud • System Architectures— Virtualization/Containers • Alternative environments (SCADA, real time systems, critical infrastructures) • Networks (Internet, LANs, wireless) • Internet Of Things (IOT) • Use of basic network administration tools • Configuration Management 	Setting up Virtual Environments. Installing Windows 10.
Powershell	<ul style="list-style-type: none"> • https://docs.microsoft.com/en-us/powershell/scripting/learn/ps101/01-getting-started?view=powershell-7.2 • Moodle Topic 2 • Moodle Topic 3 		Powershell. Script Practice. Remote Connections in Powershell.
UI, Drivers, Devices, and Applications	<ul style="list-style-type: none"> • https://docs.microsoft.com/en-us/windows-hardware/drivers/install/overview-of-device-and-driver-installation • Moodle Topic 4 • Dauti, Chapter 4 	<ul style="list-style-type: none"> • Patching • OS and Application Updates • Memory (real, virtual, management) 	Drivers. Apps, Features, and Updates.
Windows Server basics	<ul style="list-style-type: none"> • Moodle Topic 5 • Dauti, Chapter 2 • Dauti, Chapter 3 • Windows Licensing Guides 	<ul style="list-style-type: none"> • Access control Models 	Research-Kerberos. Install Windows Server. Server Manager and Computer Management.
Active Directory, Users, and Roles	<ul style="list-style-type: none"> • Moodle Topic 6 • Dauti, Chapter 5 • Dauti, Chapter 6 	<ul style="list-style-type: none"> • Configuration Management • Use of basic network administration tools • Access control Models 	Active Directory Objects. Adding Group Policy to an Object.
Windows Networking	<ul style="list-style-type: none"> • Moodle Topic 7 • An Introduction to Computer Networks, Dordal 7.8 and 7.10 	<ul style="list-style-type: none"> • Configuration Management • Use of basic network administration tools 	Installing DHCP server Windows DNS.
Virtualization	<ul style="list-style-type: none"> • Moodle Topic 10 • Dauti, Chapter 8 	<ul style="list-style-type: none"> • Managed Services • Virtualization/Hypervisors • Creation and Operation of virtualization technology 	WDS and PXE boot
File and	<ul style="list-style-type: none"> • Moodle Topic 9 	<ul style="list-style-type: none"> • Storage Devices 	Permissions.

Storage Management	<ul style="list-style-type: none"> • Dauti, Chapter 9 	<ul style="list-style-type: none"> • Managed Services • File Systems 	DFS and iSCSI.
Windows Clusters	<ul style="list-style-type: none"> • Moodle Topic 11 • Dauti, Chapter 9 • https://docs.microsoft.com/en-us/windows-server/failover-clustering/failover-clustering-overview • https://docs.microsoft.com/en-us/azure-stack/hci/concepts/stretched-clusters 	<ul style="list-style-type: none"> • Network Security Components (Data Loss Prevention) 	IIS Server Cluster. Disk Redundancy.
Active Directory Group Policy	<ul style="list-style-type: none"> • Moodle Topic 12 • Dauti, Chapter 7 		Applying AGDLP. Updating Group Policy.
Additional Tools	<ul style="list-style-type: none"> • Moodle Topic 13 		Remote Desktop over SSH. Other Tools.
Monitoring	<ul style="list-style-type: none"> • Moodle Topic 14 • Dauti, Chapter 10 	<ul style="list-style-type: none"> • Application processes and threads 	Monitoring Processes and Memory. Monitoring Networks.
Securing Windows Server	<ul style="list-style-type: none"> • Moodle Topic 13 • Dauti, Chapter 11 	<ul style="list-style-type: none"> • Vulnerability Scanning (core) • Vulnerability Windows (0-day to patch availability) • Network mapping (enumeration and identification of network components) • Network Security Components (Data Loss Prevention, VPNs / Firewalls) • People and security (social engineering) • Physical and environmental security concerns • Cyber Defense Partnerships (Federal, State, Local, Industry) • Endpoint protection-- Workstations, servers, appliances, mobile devices, peripheral devices (Printers, scanners, external storage) • Intrusion Detection and 	Windows Defender. Securing Windows Server.

		Prevention Systems, Incident Response <ul style="list-style-type: none"> • Software Security (secure coding principles, software issues by type) • Fundamental Security design principles applied to an OS • Privileged/Non-privileged states • Access Control Models • Domain Separation, process Isolation, resource encapsulation, least privilege 	
Final		<ul style="list-style-type: none"> • Covers all Topics 	

Resources

Text: Bekim Dauti, Windows Server 2019 Administration Fundamentals, Packt, 2019.

This course will make use of the uscyberrange.org for some of the virtualized content. Login information will be forthcoming.

Grading:

Grading Categories:

- Exams: There will be one midterm exam and one comprehensive final exam. These must be taken at the scheduled time except with prior approval or extenuating circumstances.
- Labs/Homework: Homework will consist of a combination of labs assigned in Moodle, and some research assignments. If you have questions about homework please ask those questions in lab or in the forum.
- Quizzes: Quizzes are graded automatically in Moodle.

Due Dates and Late Policy. Assignments are expected to be submitted on or before their due date. Late assignments will be subject to point penalties (typically 10% per day late) unless an extension is approved.

Disability Statement

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Scholarly Conduct

- All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code.

- Plagiarism, cheating, or direct use of online resources without proper attribution will result in a deduction of points no less than 20% of the total points for the assignment to a zero on the assignment at the instructor's discretion.
- All students are expected to respect the opinions and dignity of all members of the class and act in a dignified manner.
- Every effort will be made to accommodate disabilities. Please inform me of any issues.

Safety Considerations: Given the current circumstances with COVID-19 please keep in mind the following:

- Please wear a mask within the classroom.
- Cleaning kits are available. Please make use of these and clean your space at the start of class and the end of class.
- Please avoid congregating before or after class.
- Please sit in the same seat for all semester.
- Food and drink are strongly discouraged within classrooms.
- If you feel sick stay home and attend class remotely