COURSE OUTLINE: NASA102 - SERVER INFR + SECUR.

Prepared: D. Kachur
Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	NASA102: SERVER INFRASTRUCTURE AND SECURITY
Program Number: Name	2196: NETWRK ARCH & SEC AN
Department:	COMPUTER STUDIES
Academic Year:	2023-2024
Course Description:	In the first part of the course, the learner will plan, design then install an Active Directory based Windows Server. The environment will then be secured via firewall and OS updates in preparation for shares, folders and file level security. Using a Windows client OS, the learner will test their Network DNS, Web and Certificate configurations in an Active Directory model using various user accounts. Multiple domain controllers will be configured and tested using the Forest / Tree model. In part two of the course, the learner will configure, secure then test a cloud-based network server. The final part of the course will have the learner exploring then applying backup and disaster recovery plans for the network environment.
Total Credits:	4
Hours/Week:	4
Total Hours:	56
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	NASA207
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**2196 - NETWRK ARCH & SEC AN** VLO 2 Perform network monitoring, analysis and troubleshooting to determine efficient and secure operations. VLO 3 Develop a security architecture plan to incorporate both perimeter and endpoint security controls and devices to provide layers of security. VLO 6 Design and implement a virtualization and cloud computing focused infrastructure specifically addressing security risks associated with incorporating virtualization into an organizations infrastructure. VLO 7 Deploy servers to host web applications, focusing on securing the server and web from identified security risks.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems.

	EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	A+ = 90-100% A = 80-89% B = 70-79% C = 60-69% D = 50-59% F < 50% Students are expected to be present to write all tests in class, unless otherwise specified. If a student is unable to write a test due to illness or a legitimate emergency, that student must contact the professor prior to class and provide reasoning. Should the student fail to contact the professor, the student shall receive a grade of zero on the test. If a student is not present 10 minutes after the test begins, the student will be considered absent and will not be given the privilege of writing the test. Students exhibiting academic dishonesty during a test will receive an automatic zero. Please refer to the College Academic Dishonesty Policy for further information. In order to qualify to write a missed test, the student shall have: a.) attended at least 75% of the classes to-date. b.) provide the professor an acceptable explanation for his/her absence. c.) be granted permission by the professor. NOTE: The missed test that has met the above criteria will be an end-of-semester test. Labs / assignments are due on the due-date indicated by the professor. Notice by the professor will be written on the labs / assignments and verbally announced in the class. Labs and assignments that are deemed late will have the following penalty: 1 day late - 10% reduction, 2 days late, 20% reduction, 3 days late, 30% reduction. After 3 days, no late assignments and labs will be accepted. It is the responsibility of the student who has missed a class to contact the professor immediately to obtain the lab / assignment. Students are responsible for doing their own work. Labs / assignments that are handed in and are deemed identical or near identical in content may constitute academic dishonesty and result in a zero grade. Students are expected to be present to write in-classroom quizzes. There are no make-up options for missed in-class quizzes. Students have the right to learn in an environment that is distraction-free, therefore, everyone is expected to arrive on-time in class. Should lectures become distracted due to students walking in late, the professor may deny entry until the 1st break period, which is 50 minutes into the class or until that component of the lecture is complete.

The total overall average of test scores combined must be 50% or higher in order to qualify to pass this course. In addition, combined tests, Labs / Assignments total grade must be 50% or higher.

Books and Required Resources:

Purchase a Portable USB - SSD Hard Drive - NOT a Thumb-Drive by USB Portable SSD - HDD 1 TB or larger

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Install and configure a Windows Network Server	1.1 Download Windows Server source files and license key from the Microsoft Academic Alliance site 1.2 Create a Windows Server Virtual image 1.3 Install a Windows Server on a Virtual Machine 1.4 Login to Windows Server and create a backup Administrator account 1.5 Configure TCP/IP to access the network and Internet 1.6 Lockdown Windows Server using a Firewall, Anti-Virus and Service Pack updates 1.7 Install and configure a DNS Server 1.8 Promote Windows Server to a Domain Controller in an Active Directory model
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Administer a Windows Server (Users and Groups)	2.1 Explore Administrative Tools 2.2 Work with `Active Directory Users and Computers` tool 2.3 Contrast Network User Accounts and Group Types 2.4 Create User Accounts and Domain Local Groups 2.5 Add Users to Groups
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Install a Microsoft Windows Client	3.1 Download Windows 10 .iso source file with license key from the Microsoft Academic Alliance site 3.2 Create a Windows 10 Virtual Machine 3.3 Install Windows 10 on a Virtual Machine 3.4 Login to Windows 10 then create a backup Administrator account 3.5 Configure TCP/IP to access the network and Internet 3.6 Configure Windows 10 to prepare for an Active Directory connection with your Windows Server 3.7 Join Windows 10 to your Windows Server AD Domain
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Administer Windows Server (Shares, Folders and Files)	4.1 Explore Share Level Permissions 4.2 Identify the various Security settings 4.3 Apply Folder and File Level Security 4.4 Contrast Share level vs Folder / File level Security 4.5 Apply and test Shares / Folders and File Permissions in an NTFS-based environment using hands-on business lab examples 4.6 Use Windows 10 client to test Windows Server Share / Folder / File level security

Course Outcome 5	Learning Objectives for Course Outcome 5
5. Install and Configure Web Services	5.1 Install and configure an IIS Web Server 5.2 Install and configure an FTP Server 5.3 Create a Website for testing purposes 5.4 Apply and test various security settings to your website using basic, windows and reverse encryption authentication processes 5.5 View and analyse Web and FTP Server weblogs 5.6 Create a custom error-reporting webpage 5.7 Explain the role of Certificate Services 5.8 Analyze Web Certificates
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Explore Enterprise-Based Networking	6.1 Contrast Domain, Tree and Forest Concepts 6.2 Explain Multi-Master Replication 6.3 Diagram a Multi-site Active Directory Domain Model 6.4 Explain the role and benefits of Distributed File System 6.5 Add a 2nd domain controller to an existing domain
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Configure, Secure then test a Cloud-Based Server	7.1 Analyze cloud-based network models 7.2 Draw your planned cloud-based model using diagramming tools 7.3 Add user accounts to an existing cloud-based server 7.4 Create, then secure a cloud-based share 7.5 Diagram then explain replication from on-premise to a cloud-based network 7.6 Explore features that enhance the cloud-based environment
Course Outcome 8	**Learning Objectives for Course Outcome 8**
8. Create Backup Strategies and Disaster Recovery Plans	8.1 Analyze backup methods and schedules 8.2 Work with the file `Archive` bit for backups and restores 8.3 Perform Volume backups 8.4 Research Storage Area Networks 8.5 Explain off-site backups and data backup integrity testing

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	40%
Test #1	30%
Test #2	30%

Date: August 21, 2023

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.