COURSE OUTLINE: NASA105 - VIRTUAL INFRA

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Course Code: Title	NASA105: VIRTUALIZATION INFRASTRUCTURE
Program Number: Name	2196: NETWRK ARCH & SEC AN
Department:	COMPUTER STUDIES
Academic Year:	2024-2025
Course Description:	This course will cover the various technologies and business models related to virtualization and cloud computing. Students will deploy and manage a virtual infrastructure, taking into account the security considerations. Specific topics will include active directory integration, network security policies, firewall configuration and effective use of privileges, roles and permissions.
Total Credits:	5
Hours/Week:	5
Total Hours:	70
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
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 1 Design an enterprise network by applying knowledge of networking and routing protocols. 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.
Essential Employability Skills (EES) addressed in this course:	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 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
Course Evaluation:	Passing Grade: 50%, A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation &	A+ = 90-100%

Assessment Requirements:

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 advance, during class.

Labs and assignments that are deemed late will have a 10% reduction per academic day to a maximum of 5 academic days at 50% (excluding weekends and holidays). Example: 1 day late - 10% reduction, 2 days late, 20%, up to 50%. After 5 academic days, no late assignments and labs will be accepted. If you are going to miss a lab / assignment deadline due to circumstances beyond your control and seek an extension of time beyond the due date, you must contact your professor in advance of the deadline with a legitimate reason that is acceptable.

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 can be up to 50 minutes after class starts 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.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Explore and Introduction to Virulization	1.1 Explore Virtualization concepts 1.2 Describe the history and evolution of virtualization

	1.3 Explore the difference between public and privates clouds 1.4 Describe the benefits and challenges of virtualization 1.5 Explain the differences between public and private cloud
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Explore Virtualization Technologies	2.1 Define Hypervisor Types: Type 1 vs Type 2 2.2 Describe Hypervisor Platforms/Software available 2.3 Explore differences between Containerization vs Traditional Virtualization 2.4 Discuss Security Considerations 2.5 Use available resources to research types of Virtualization
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3.Explore how to install, configure, monitor and manage virtual machines and networks.	3.1 Define steps installing a Type 1/2 Hypervisor 3.2 Explore managing the hypervisor 3.3 Discuss creating and configuring virtual hard disks 3.4 Discuss creating and configuring virtual machines 3.5 Describe monitoring virtual resources 3.6 Use resources available to installand manage a virtual machine
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Explore how to create and configure virtual machine networks.	4.1 Describe creating and using virtual switches 4.2 Discuss advanced networking features 4.3 Describe configuring and using network virtualization 4.4 Use available resources to configure a virtual machine network
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Explore Deployment Strategies	5.1 Describe providing high availability and redundancy for virtualization 5.2 Discuss implementing virtual machine movement 5.3 Describe implementing and managing virtual machine replication 5.4 Explore the concepts of High Availability and Fault Tolerance 5.5 Discuss disaster recover and continuity planning
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Explore Cloud Integration and Hybrid Environments	6.1 Explore an Introduction to Cloud Environments 6.2 Discuss Integration of virtual infrastructure with public, private, and hybrid clouds 6.3 Cloud migration strategies and challenges 6.4 Make use of resources to implement a virtual machine in a cloud enivironment

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Labs	40%
Quizzes	10%

	Test #1	25%
	Test #2	25%
Date:	June 16, 2024	
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.	