

## **NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY**

### **ITN 254 – VIRTUAL INFRASTRUCTURE: INSTALLATION AND CONFIGURATION (4 CR.)**

#### **Course Description**

Explores concepts and capabilities of virtual architecture with a focus on the installation, configuration, and management of a virtual infrastructure, ESX Server, and Virtual Center. Covers fundamentals of virtual network design and implementation, fundamentals of storage area networks, virtual switching, virtual system management, and engineering for high availability. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

#### **General Course Purpose**

Virtual Infrastructure: Installation and Configuration is a critical part of designing reliable and secure cloud computing infrastructure system. Business enterprises and government entities are moving aggressively from the traditional on-premise data center to the cloud. Such moves require trained cloud computing design architecture and engineers. In this course students will learn the fundamentals of high availability cloud computing system that supports business continuity. Learn the design-cost aware systems. Learn cost optimized cloud computing systems and optimized for use by different types of organization both public and private sectors

#### **Course Prerequisites/Corequisites**

Prerequisites: ITN 213 and ITN 257.

#### **Course Objectives**

Upon completing the course, the student will be able to:

- a) Describe high availability and business continuity cloud computing design.
- b) Demonstrate the ability to design an architectural cloud computing environment with optimized cost.
- c) Articulate the skills and the ability to manage cloud-based application systems.
- d) Demonstrate the ability of sound network design principles in small, medium and large-scale complex enterprise networks.
- e) Define and design secure cloud computing environment. Design security controls with shared responsibility models between the cloud providers and the cloud consumers.
- f) Design data access controls. Data protection at different states: data in transit and data at rest.
- g) Demonstrate the ability of designing scalable and elastic computing environment.

#### **Major Topics to be Included**

- a) Resilient cloud design and architecture principles.
- b) Cost effective and optimized cloud computing design
- c) Software and application development lifecycle
- d) Secure cloud environment with authentication, authorization, and accounting principles (AAA).
- e) Secure data with access control principles both for data in transit and data at rest.
- f) Secure data storage.
- g) Design scalable, reliable and elastic cloud computing environment.

**Required Time Allocation per Topic**

In order to standardize the core topics of this course so that a course taught at one campus is equivalent to the same course taught at another campus, the following student contact hours per topic are required. Each syllabus should be created to adhere as closely as possible to these allocations. The course can be given in the standard 16-week, 12-week, or 8-week section format. All format offerings should meet the same number of contact hours. The final exam time is not included in the timetable.

<b>Topics</b>	<b>Hours</b>	<b>Percent</b>
Building virtual servers. Windows Servers and Linux servers	9	20%
Highly available system for business continuity support.	9	20%
Designing Cost optimized cloud computing environment.	3	7%
Application deployment and lifecycle application development.	9	20%
Best practice in cloud computing network design, and secure data and system access (AAA)	9	20%
Exams, quizzes, and assignments to demonstrate knowledge	6	13%
<b>Total</b>	<b>45</b>	<b>100</b>