CTI 141: CLOUD & STORAGE CONCEPTS

COURSE DESCRIPTION:

Prerequisites: None
Corequisites: None

This course introduces cloud computing and storage concepts. Emphasis is placed on cloud terminology, virtualization, storage networking and access control. Upon completion, students should be able to perform tasks related to installation, configuration and management of cloud storage systems
Course Hours per Week: Class, 1. Lab, 4. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

A. Describe cloud computing.
    1. Explain the relevance of cloud computing.
    2. Describe deployment of cloud computing.
    3. Identify cloud computing service models.
B. Implement a cloud infrastructure.
    1. Implement physical layer components of a cloud storage system.
    2. Implement control layer components of a cloud storage system.
    3. Implement service layer components of a cloud storage system.
C. Manage a cloud infrastructure.
    1. Describe the service orchestration for a cloud infrastructure.
    2. Describe the business continuity for a cloud infrastructure.
    3. Describe the security for a cloud infrastructure.
    4. Describe service management functions for a cloud infrastructure.
    5. Evaluate storage networking technologies and their deployments
    6. Explain business continuity and archiving solutions
    7. Identify security threats in a cloud infrastructure

OUTLINE OF INSTRUCTION:

I. Introduction to Cloud Computing
    A. Essential characteristics of cloud computing
    B. Cloud service models and cloud service brokerage
    C. Cloud deployment models

II. Building the Cloud Infrastructure
    A. Cloud computing reference model
    B. Deployment options and solutions for building cloud infrastructure
    C. Considerations for building cloud infrastructure

III. Physical Layer
   A. Compute system
   B. Storage system architectures
   C. Network connectivity

IV. Virtual Layer
   A. Virtual layer functions
   B. Virtualization software
   C. Resource pool and virtual resources

V. Control Layer
   A. Control layer functions
   B. Control software
   C. Software-defined approach for managing IT infrastructure
   D. Resource optimization techniques

VI. Service and Orchestration Layers
   A. Service layer functions
   B. Cloud portal
   C. Cloud interface standards
   D. Protocols for accessing cloud services
   E. Service orchestration
   F. Cloud service lifecycle

VII. Business Continuity
   A. Business continuity and service availability
   B. Fault tolerance mechanisms
   C. Backup and replication
   D. Cloud application resiliency

VIII. Security
   A. Cloud security threats
   B. Cloud security mechanisms
   C. Governance, risk, and compliance

IX. Service Management
   A. Service portfolio management processes
   B. Service operation management processes