C-ID Descriptor
Cloud Computing and Virtualization

Descriptor Details

- **Descriptor Title**: Cloud Computing and Virtualization
- **C-ID Number**: 170
- **Units**: 3
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General Description

This course covers cloud deployment and service models, cloud infrastructure, and the key considerations in migrating to cloud computing. This course also provides the required technology essentials across all domains—including compute, storage, networking, applications, and databases—-to help develop a strong understanding of virtualization and cloud computing technologies. Prepares students for the AWS Cloud Practitioner and the CompTIA Cloud+ certifications.

Prerequisites

No information provided

Corequisites

No information provided

Advisories

ITIS 150 - Computer Network Fundamentals
ITIS 155 - Systems and Network Administration

Content

1. Introduction to Cloud Computing

a. Essential characteristics of cloud computing
b. Cloud service models and cloud service brokerage
c. Cloud deployment models

2. Building the Cloud Infrastructure
   a. Cloud computing reference model or adoption framework
   b. Deployment options and solutions for building cloud infrastructure
   c. Considerations for building cloud infrastructure
3. Virtual Layer
   a. Virtual layer functions
   b. Virtualization software
   c. Resource pool and virtual resources
4. Core Services
   a. Compute (server)
   b. Storage
   c. Networking and Virtual Private Clouds (VPC)
   d. Database
5. Cloud Architecture
   a. Cloud computing well-architected frameworks
   b. Well-architected design principles
   c. Reliability and High Availability
6. Business Continuity
   a. Business continuity and service availability
   b. Fault tolerance mechanisms
   c. Backup and replication
   d. Cloud application resiliency
7. Security
   a. Cloud security threats
   b. Cloud security mechanisms
   c. Governance, risk, and compliance
8. Service Management
   a. Service portfolio management processes
   b. Service operation management processes

Lab Activities

No information provided

Objectives

At the conclusion of this course, the student should be able to:

1. Explain the importance and benefits of cloud computing, the various cloud services (IaaS, PaaS, and SaaS), and its rapid adoption.
2. Present and use a roadmap for building cloud infrastructure using a cloud computing reference model or adoption framework.
3. Explain the software-defined approach to managing IT infrastructure including virtualization, core services (compute, storage, network, and database), and deployment models (public/private, hybrid and multi-cloud).
4. Explain business continuity options and address common security concerns in a cloud environment.
5. Describe service management activities in cloud computing.

Evaluation Methods

Evaluation will include hands-on projects and a combination of examinations, presentations, discussions, or problem-solving assignments.

Textbooks

- Montgomery, T., *CompTIA Cloud+ Study Guide: Exam CV0-002*, Sybex
- Piper, B. and Clinton, D., *AWS Certified Cloud Practitioner Study Guide: Exam CLF-C01*, Sybex