Montgomery County Community College
CIS 206
Cloud Services
3-2-2

COURSE DESCRIPTION:
This course will teach a student the knowledge and skills required to implement, maintain, and deliver cloud technologies and infrastructures (e.g. server, network, storage, and virtualization technologies), and to understand aspects of IT security and use of industry best practices related to cloud implementations and the application of virtualization. Various models of cloud services and deployments will be discussed. The course will include the objectives of the CompTIA Cloud + certification examination.

REQUISITES:
Previous Course Requirements
- CIS 166 Introduction to Cloud Computing

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Explain Cloud Concepts, Models and services.	Lecture/Discussion Homework Assignments Assigned Readings Research	Discussion/Questions Research Presentations Chapter Quiz
2. Explain cloud service delivery models.	Lecture/Discussion Homework Assignments Assigned Readings Hands on Labs	Discussion/Questions Research Presentations Chapter Quiz
3. Explain cloud infrastructure and storage.	Lecture/Discussion Homework Assignments Assigned Readings Research Hands on Labs	Discussion/Questions Research presentations Chapter Quiz
4. Implement security in the cloud.	Lecture/Discussion Homework Assignments Research Hands on Labs	Discussion/Questions Research presentations Chapter Quiz
5. Design and Configure a private Cloud.	Lecture/Discussion Research Hands on Lab Project	Written final exam and skills based assessment of project.

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated

results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

SEQUENCE OF TOPICS:

Cloud Concepts and Models

- Cloud services to include : SaaS, IaaS, CaaS, PaaS, XaaS, DaaS, BPaaS; and accountability and responsibility based on service models
- Private, Public, Hybrid, Community, On-premise vs. Off-premise cloud hosting
- Delivery models, security differences between models, multi-tenancy issues, data segregation, network isolation
- Cloud characteristics and object storage concepts.

Virtualization

- Differences hypervisor types.
- Install, configure, and manage virtual machines and devices.
- Virtual resource migration.
- Benefits of virtualization in a cloud environment.
- Virtual components of cloud construction

Infrastructure

- Storage technologies.
- Storage configuration concepts.
- Storage provisioning.
- Implementation of network configurations.
- Importance of network optimization.
- Basic network connectivity issues.
- Common network protocols, ports, and topologies.

Network Management

- Resource monitoring techniques.
- Allocation of virtual (guest) resources
- Remote access tools

Network Security Concepts

- Storage security concepts, methods, and best practices.
- Encryption technologies and methods.
- Access control methods.

Systems Management

- Cloud environment policies and procedures
- Diagnosing and remediation of physical hosts
- Host and guest performance concepts
- Testing cloud deployment cloud services.

Designing and Building a New Cloud

- Analyzing user requirements
- Selecting cloud type
- Infrastructure and resource analysis
- Building infrastructure
- Testing and optimization

Utilizing Existing Cloud Infrastructure

- Analyzing user requirements
- Matching and dedicating resources
- Migration of services
- Testing and Optimization

Business Continuity in the Cloud

- Disaster recovery methods and concepts.
- Deployment of resources

LEARNING MATERIALS:

Mulholland et al (2013). *Enterprise Cloud Computing*. Meghan-Kiffer Press. ISBN-10: 0929652290

Rhoton (2013). *Cloud Computing Explained: Implementation Handbook for Enterprises*. Recursive Press. ISBN-10: 0956355609

Students will have free access to VMware, CITRIX, Microsoft Server, Cisco IOS and data storage software in the lab.

COURSE APPROVAL:

Prepared by: Anil Datta Date: 9/6/2013

VPAA/Provost Compliance Verification:

Victoria Bastecki-Perez, Ed. D. Date: 1/2014

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.