IT C198: CLOUD FOUNDATIONS

Item	Value
Curriculum Committee Approval Date	10/27/2023
Top Code	070800 - Computer Infrastructure and Support
Units	3 Total Units
Hours	68 Total Hours (Lecture Hours 54; Lab Hours 14)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

Formerly: CST C198. This course covers the topics of cloud computing which will validate the knowledge and skills used in the most common cloud service platforms. This will include activities in Amazon Web Services (AWS), Google Cloud, and Microsoft Azure. Common topics such as elasticity, storage, database, security, pricing, access, identity management, and support will be covered. ADVISORY: IT C128 or IT C201. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate the ability to configure different types of cloud components within AWS infrastructure.
2. Analyze the different pricing tiers of AWS components and provide a solution to a given a lab scenario.
3. Demonstrate the ability to design, plan, and execute the deployment of a given business case using AWS when provided an initial design.

Course Objectives

- 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

Lecture Content

Introduction to Cloud Computing Essential characteristics of cloud computing Cloud service models and cloud service brokerage Cloud deployment models Building the Cloud Infrastructure Cloud computing reference model or adoption framework Deployment options and solutions for building cloud infrastructure Considerations for building cloud infrastructure Virtual Layer Virtual layer functions Virtualization software Resource pool and virtual resources Core Services Compute (server) Storage Networking and Virtual Private Clouds (VPC) Database Cloud Architecture Cloud computing well-architected frameworks Well-architected design principles Reliability and High Availability Business Continuity Business continuity and service availability Fault tolerance mechanisms Backup and replication Cloud application resiliency Security Cloud security threats Cloud security mechanisms Governance, risk, and compliance Service Management Service portfolio management processes Service operation management processes

Lab Content

Simple monthly calculator activity Support plan scavenger hunt activity AWS Well-Architected Framework Design Principles activity Interpret AWS Trusted Advisor recommendations activity AWS Management Console clickthrough activity Shared responsibility model activity Label this network diagram activity Introduction to Amazon EC2 lab Amazon EC2 Educator-led activity Create an AWS Lambda stopinator function hands-on activity Deploy a web app on Elastic Beanstalk hands-on activity Working with Amazon EBS lab Database case study activity Build your DB server and interact with your DB using an app lab AWS Well-Architected Framework Design Principles activity Interpret AWS Trusted Advisor recommendations activity Elastic Load Balancing activity XVIII. Amazon CloudWatch activity Scale and Load Balance Your Architecture lab

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

Instructional techniques for this course will come in the format of face-to-face, hybrid, or online formats. All of these formats will incorporate instructional methodologies to include but not be limited to lecture, hands-on assignments, discussions, and projects that can be either individually or group assigned. This course may utilize a combination of lecture, hands-on guided laboratory assignments, classroom/discussion board student interactions, Internet problem solving, quizzes, tests, and troubleshooting assignments to achieve the goals and objectives of this course. All instructional methods are consistent across all modalities.

Reading Assignments

Students are required to read the assigned chapters and complete exams, knowledge based assignments, definitions, and text-based scenario questions.

Writing Assignments

Writing assignments may consist of topics from class activities and forum discussions.

Out-of-class Assignments

Students are able to complete hands-on labs based on chapter topics utilizing cloud provider platforms such as AWS, Google, and Microsoft Azure within their free tier.

Demonstration of Critical Thinking

Given sets of operational data, the student will be able to critically analyze the data and make recommendations on how to improve the operations based on those findings.

Required Writing, Problem Solving, Skills Demonstration

Given a scenario, students will be able to troubleshoot a specific problem, write a detailed outline of the tasks that need to be accomplished to rectify the problem, complete the tasks as outlined, and test to determine if the problem has been solved. Most all of this will be done in the AWS Free Cloud Tier.

Eligible Disciplines

Computer service technology: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Piper, Ben and Clinton, David. AWS Certified Cloud Practitioner Study Guide, 2nd ed. Alameda, CA: Sybex, 2023

Other Resources

1. Curriculum and labs are provided online at via AWS academy 2. Coastline Library