IT 0176 - CLOUD COMPUTING - AMAZON WEB SERVICES SYSTEM OPERATIONS

Catalog Description

Prerequisite: Completion of IT 115 and IT 175 with grades of "C" or better
Advisory: Completion of IT 170 and/or IT 171 with grades of "C" or better
Hours: 72 (54 lecture, 18 laboratory)
Description: Helps students identify and develop the skills needed for implementing cloud initiatives. Students will gain experience deploying, managing, and operating workloads on the AWS cloud platform. This course helps prepare students for the AWS Certified SysOps Administrator - Associate industry certification exam. (CSU)

Course Student Learning Outcomes

- CSLO #1: Create automatable and repeatable deployments of networks and systems on AWS.
- CSLO #2: Explain how some AWS customers design their infrastructures and implement various strategies and services.
- CSLO #3: Demonstrate marketable cloud administration skills.

Effective Term

Fall 2024

Course Type

Credit - Degree-applicable

Contact Hours

72

Outside of Class Hours

90

Total Student Learning Hours

162

Course Objectives

Lecture Objectives:

1. Explain AWS Regions and edge locations and the criteria for selecting them
2. Describe the purpose and function of AWS Systems Manager and it's related features
3. Differentiate between the instance types and storage options for available for EC2 instances
4. Describe Elastic Load Balancing features
5. Explain the purpose and function of AWS Lambda
6. Define an AWS API Gateway
7. Describe AWS CloudWatch Logs features and benefits
8. Identify some of the AWS services for configuration management

Lab Objectives:

1. Create EC2 instances
2. Configure failover routing
3. Demonstrate using CloudWatch to monitor applications and infrastructure
4. Create a new Amazon Machine Image (AMI) from an existing Amazon Elastic Compute Cloud (Amazon EC2) instance.
5. Build a Virtual Private Cloud and deploy resources.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
  - Example: The AWS Command Line Interface (AWS CLI) is a command line tool that provides an interface for interacting with products and services from Amazon Web Services (AWS). Explain in your own words why you might want to install this on a Linux EC2 instance and how it could be used. When you have finished your post read what other students said and reply to at least 3 other student posts.
- Objective Examinations
  - Example: A SysOps engineer that works at the local university decided to launch EC2 instances to reduce their hardware footprint. They are new to AWS and only need to launch in one Region until their needs grow. What is the first step when you launch an EC2 instance? a) Determine the Amazon Machine Image (AMI) that will be used. b) Configure launch access and control permissions. c) Provide configuration details. d) Select instance type and size.
- Skill Demonstrations
  - Example: Using the lab environment instructions provided configure failover routing for the Mon and Pop Café' website.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Instructor will demonstrate using CloudWatch to monitor applications and infrastructure then provide students with lab instructions to repeat the process in a virtual environment.

Lecture:

1. The instructor will review content with students that explains the purpose and function of AWS Lambda. Students will participate in an online discussion board regarding the topic.

Distance Learning

1. Instructor will provide learning materials that define an AWS API Gateway via the LMS. Students will complete an activity related to this topic to demonstrate an understanding of the topic.

Typical Out of Class Assignments
Reading Assignments

Students will be assigned weekly reading from the materials provided and required to complete knowledge checks related to the weeks reading topics. Example: Read the materials in Module 4 - Computing, Scaling, and Name Resolution and complete the Knowledge Check for Module 4.

Writing, Problem Solving or Performance

Using the lab environment and instructions provided students will be asked to complete a variety of lab activities. Example: Using the VPC Flow Logs troubleshoot and resolve the Amazon VPC connectivity issue that is presented.

Other (Term projects, research papers, portfolios, etc.)
Required Materials

- AWS Academy Cloud Operations
    - Author: AWS Academy
    - Publisher: AWS Academy - Online Content
    - Publication Date:
    - Text Edition:
    - Classic Textbook?:
    - OER Link:
    - OER: Yes

Other materials and-or supplies required of students that contribute to the cost of the course.