C S 55G: AWS CLOUD PRACTITIONER CERTIFICATION PREPARATION

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	4.5
Hours:	4 lecture, 2 laboratory per week (72 total per quarter)
Advisory:	C S 55A or equivalent knowledge and experience.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- A successful student will be able to describe the AWS Global Infrastructure model and explain its benefits to their organization.
- The student will be able to configure and deploy a cloud-based infrastructure which meets basic security and compliance requirements.

Description

This introductory course provides an overview of Cloud concepts, Amazon Web Services (AWS) core services, basic security, architecture principles, pricing, and technical support. Students gain an overall understanding of the AWS Cloud, independent of specific technical roles. Review of core characteristics of deploying and operating in the AWS Cloud. This course prepares students to pursue becoming an AWS Certified Cloud Practitioner using official AWS Academy Cloud Foundations material.

Course Objectives

The student will be able to:

1. Understand, work with and configure the AWS Global Infrastructure model and the basic AWS services.
2. Understand, work with and configure the key services on the AWS platform and their common use cases.
3. Understand, work with and configure the AWS Cloud architectural principles.
4. Understand, work with and configure the AWS basic security and compliance aspects of the AWS platform and the shared security model.
5. Understand, work with and configure billing, account management, and pricing models.
6. Identify sources of documentation or technical assistance (e.g., whitepapers, support tickets).

Course Content

1. Review of Cloud concepts
    a. Cloud Computing for the practitioner
    b. Introduction to Cloud economics
    c. AWS Global Infrastructure overview
2. AWS core services
    a. Introduction to core services
    b. Introduction to Compute
        i. AWS Elastic Compute Cloud (EC2)
    c. Introduction to storage
        i. AWS Elastic Block Store (EBS) block store
        ii. AWS S3 Simple Storage Service object store
        iii. AWS Elastic File System (EFS) file store
        iv. AWS Glacier archival store
    d. Introduction to AWS Virtual Private Cloud (VPC)
        i. VPC wizard
    e. Introduction to the database
        i. AWS Relational Database Service (RDS) SQL database
        ii. AWS DynamoDB object database
    f. Balancing, scaling and monitoring
3. AWS Cloud security
    a. AWS Shared Responsibility Model
    b. AWS Access Identity and Access Management (IAM)
    c. AWS Trusted Advisor
    d. AWS CloudTrail
    e. AWS Config
    f. AWS day one best practice review
    g. AWS security and compliance programs
    h. AWS security resources
4. AWS architecting
    a. Introduction to the Well-Architected Framework
    b. Well-Architected design principles
    c. Understanding reliability and high availability
5. AWS Cloud billing and support services
    a. Overview of AWS technical support services and costs

Lab Content

1. Core services
    a. Basic EC2 configuration
    b. Working with EBS
    c. Build your VPC and launch a web server
    d. Build your DB service and interact with your DB using an app
    e. Scale and load balance your architecture
    f. Introduction to AWS IAM

Special Facilities and/or Equipment

1. Access to a computer with a web browser compatible with the Foothill learning management system.
2. A learning management system with an assignment posting component (through which all lab assignments are to be submitted) and a forum component (where students can discuss course material and receive help from the instructor). This applies to all sections, including on campus (i.e., face-to-face) offerings.

3. The college will provide a fully functional and maintained course management system through which the instructor and students can interact.
4. Students must have email accounts and ongoing access to computers with internet capabilities.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Subject assessments and quizzes
Laboratory assignments which include detailed instructions, sample runs and documentation
Final examination

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lectures which include motivation for the architecture of the specific topics being discussed
In-person or online labs (for all sections, including those meeting face-to-face/on campus), consisting of:
1. An assignment webpage located on a college-hosted course management system or other department-approved internet environment. Here, the students will review the specification of each assignment and submit their completed lab work
2. A discussion webpage located on a college-hosted course management system or other department-approved internet environment. Here, students can request assistance from the instructor and interact publicly with other class members
Detailed review of laboratory assignments which includes model solutions and specific comments on the student submissions
In-person or online discussion which engages students and instructor in an ongoing dialog pertaining to all aspects of designing, implementing and analyzing programs
When course is taught fully online:
1. Instructor-authored lecture materials, handouts, syllabus, assignments, tests, and other relevant course material will be delivered through a college-hosted course management system or other department-approved internet environment
2. Additional instructional guidelines for this course are listed in the attached addendum of CS department online practices

Representative Text(s) and Other Materials

Sarkar, Aurobindo. Learning AWS: Design, Build, and Deploy Responsive Applications using AWS Cloud Components, 2nd ed.. 2018.

Lucifredi, Ryan. AWS System Administration, 1st ed.. 2018.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Reading:
   a. Textbook assigned reading averaging 30 pages per week.
   b. Reading the supplied handouts and modules averaging 10 pages per week.
   c. Reading online resources as directed by instructor though links pertinent to programming.
   d. Reading library and reference material directed by instructor through course handouts.
2. Writing:
   a. Writing technical prose documentation that supports and describes the programs that are submitted for grades.

Discipline(s)

Computer Science