SECTION I

SUBJECT AREA AND COURSE NUMBER

COMP 671

COURSE TITLE	ALTERNATE TITLE(S)
AWS ACADEMY CLOUD FOUNDATIONS	AWS CLOUD FOUNDATIONS
	AWS CLOUD COMPUTING 1
	AWS CF
	CLOUD COMPUTING 1

TYPE COURSE

NON–FEE   VOCATIONAL

CATALOG COURSE DESCRIPTION

The course is intended for students who seek an overall understanding of cloud computing concepts on the Amazon Web Services (AWS) platform Emphasis is placed on the skills needed to demonstrate a general understanding of cloud computing, independent of specific technical roles. Topics include an overview of cloud concepts, core cloud services, security, architecture, pricing, and support. (FT)

LECTURE / LABORATORY HOURS

38 - 46

ADVISORIES

COMP 608 Basic Network Configuration or equivalent; AND
COMP 612 Hardware Service Technician or equivalent; OR
COMP 640 Windows Operating Systems or equivalent; OR
COMP 641 Linux Essentials or equivalent

RECOMMENDED SKILL LEVEL

Possess a 12th grade reading level; ability to communicate effectively in the English language; knowledge of math concepts at the 8th grade level and intermediate computer literacy

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
    SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
    SDCE students demonstrate effective communication skills.
3. Critical Thinking
    SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
    SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self advocacy skills to cope with changing situations in their lives.

COURSE GOALS

1. Learn about the advantages of cloud computing, the uses of the cloud deployment models work, and the role of the AWS Cloud Adoption Framework.
2. Gain an understanding of Regions, Availability Zones, and Edge Locations
3. Explore how cloud computing is used to provide server and serverless services
4. Learn about the different storage services and their use cases
5. Learn how to configure a simple and secure virtual network and firewall
6. Explore different database services in the cloud
7. Learn how to distribute traffic and scale infrastructure to ensure availability
8. Explore how to monitor resources and applications
9. Learn how to use security best practices to ensure compliance in the cloud
10. Explore the well-architected pillars and design principles

COURSE OBJECTIVES

Upon successful completion of the course the student will be able to:

1. Describe the cloud deployment models and their comparative advantages.
2. Describe the purpose and use of regions, availability zones, and edge locations
3. Explain the difference between server and serverless compute services
4. Describe use cases for cloud storage options
5. Employ a simple virtual network with virtual firewalls and security groups.
6. Select the appropriate database solution based on the specific project parameters.
7. Select appropriate methods to secure data delivery for high availability and reliability.
8. Describe security best practices and compliance in the cloud

SECTION II

COURSE CONTENT AND SCOPE

1.   Cloud Concepts (foundational)
    1.1.   Defining cloud computing

COURSE CONTENT AND SCOPE (CONTINUED)

- 1.1.1. IaaS (Infrastructure as a Service)
- 1.1.2. PaaS (Platform as a Service)
- 1.1.3. SaaS (Software as a Service)
- 1.2. Advantages
  - 1.2.1. Variable expense
  - 1.2.2. Massive scaling
  - 1.2.3. Infrastructure needs
  - 1.2.4. Speed and agility
  - 1.2.5. Data centers
  - 1.2.6. Global simplicity
- 1.3. Economics
- 1.4. AWS global infrastructure
2. Core Services (foundational)
  - 2.1. Compute
    - 2.1.1. EC2 (Elastic Compute Cloud)
    - 2.1.2. Lightsail
    - 2.1.3. Batch
    - 2.1.4. Elastic Beanstalk
    - 2.1.5. Lambda
    - 2.1.6. Autoscaling
  - 2.2. Storage
    - 2.2.1. S3 (Simple Storage Service)
    - 2.2.2. EBS (Elastic Block Store)
    - 2.2.3. EFS (Elastic File System)
    - 2.2.4. Glacier
    - 2.2.5. Storage Gateway
  - 2.3. Networking
    - 2.3.1. VPC (Virtual Private Cloud)
    - 2.3.2. CloudFront
    - 2.3.3. Route 53
    - 2.3.4. AWS Direct Connect
    - 2.3.5. Elastic Load Balancing
  - 2.4. Databases
    - 2.4.1. Aurora
    - 2.4.2. RDS (Relational Database Service)
    - 2.4.3. DynamoDB
    - 2.4.4. ElastiCache
3. Security, Identity, and Compliance
  - 3.1. Shared responsibility model
  - 3.2. IAM (Identity and Access Management)
  - 3.3. Trusted Advisor
  - 3.4. CloudTrail
  - 3.5. Configuration
  - 3.6. Day one best practice review
  - 3.7. Security and compliance programs
  - 3.8. Security resources

COURSE CONTENT AND SCOPE (CONTINUED)

4. Architecting (foundational)
    4.1. Cloud computing difference
        4.1.1. Programmable resources
        4.1.2. Capacity
        4.1.3. Managed services
        4.1.4. Built-in security
    4.2. Design principles
        4.2.1. Scaling
        4.2.2. Disposable versus fixed resources
        4.2.3. Automating
        4.2.4. Loose coupling
        4.2.5. Services versus servers
        4.2.6. Databases
        4.2.7. Removing single points of failure
        4.2.8. Optimizing
        4.2.9. Caching
        4.2.10. Securing
5. Cloud Support
    5.1. Technical support plans
        5.1.1. Basic
        5.1.2. Developer
        5.1.3. Business
        5.1.4. Enterprise
    5.2. TCO (Total Cost of Ownership)
        5.2.1. Pricing philosophy
        5.2.2. Leveraging reserved pricing
        5.2.3. Usage patterns
        5.2.4. Scenarios

APPROPRIATE READINGS

Appropriate readings may include, but are not limited to, periodicals, magazines, instructor-written materials, manuals, instructor selected URLs, and publications related to the architecting of infrastructures in the AWS cloud environment, including white papers and documentation describing the AWS well-architected pillars and design principles.

WRITING ASSIGNMENTS

Appropriate writing assignments may include, but are not limited to, preparing text for an assigned project, documenting all laboratories and project work, and completing all written assigned reports, such as an analysis of a use-case for shifting a workload to the cloud.

OUTSIDE ASSIGNMENTS

Outside assignments may include, but are not limited to, reading texts and reference resources; research as needed to complete projects, such as how cloud computing is used to deliver data and services; and organizing and preparing written answers to assigned questions

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments which demonstrate critical thinking may include, but are not limited to, analysis and evaluation of assigned text and reference resources, and utilize this analysis in classroom discussions, performing laboratory activities, and in researching and comparing the strengths and benefits of the different cloud deployment models. Students must select appropriate methods and resources needed to complete laboratory assignments.

EVALUATION

A student's grade will be based on multiple measures of performance and will include evaluation of student's ability to:

1.   Perform in a variety of activities and assignments related to the course objectives.
2.   Complete written and practical examinations.
3.   Contribute to class and group discussions.
4.   Maintain attendance and punctuality per current policy.
5.   Demonstrate ability to work independently and as a team member.
6.   Demonstrate troubleshooting skills.

Upon successful completion of each course in the program, a Certificate of Course Completion will be issued. Upon successful completion of all courses included in the program, a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Methods of instruction may include, but are not limited to, lectures, self-paced lab, demonstrations, individualized study, use of audio-visual aids, group/team work, tutorials, outside assignments, guest lectures, field trips, and guided student job assignments.

This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

AWS Academy Cloud Computing Architecture, AWS Academy, LMS
AWS Certified Solutions Architect Study Guide: Associate SAA-C01 Exam, Ben Piper, David Clinton, Wiley Publishing, current edition

Web Resources:
https://docs.aws.amazon.com/index.html
https://aws.amazon.com/console/
https://aws.amazon.com/training/

TEXTS AND SUPPLIES (CONTINUED)

Supplies: Journal (composition book), USB Drive or other storage media

PREPARED BY: Richard Gholson   DATE: November 6, 2019

REVISED BY: DATE:

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog