Course Outline

AWS Academy Introduction to Cloud: Semester 1

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Course Version

This course outline applies to version 1.0 of *AWS Academy Introduction to Cloud: Semester 1* in English.

Description

AWS Academy Introduction to Cloud: Semester 1 is an exploration of cloud computing. In this course, students explore cloud computing services, applications, and use cases. Students dive deeply into cloud computing best practices and learn how cloud computing helps users develop a global infrastructure to support use cases at scale while also developing and inventing innovative technologies.

This course provides students with classroom instruction that introduces cloud computing skills and accelerates students toward the next steps in their educational journey. The content of this course is aligned to the K–12 Computer Science Framework Practices including computational thinking. The seven core practices of computer science describe the behaviors and ways of thinking that computationally literate students use to fully engage in today's data-rich and interconnected world.

Course Objectives

Upon completion of this course, students will be able to do the following:

- Describe what a cloud service provider (CSP) is and the value they bring to computing
- Describe basic security and compliance aspects of the AWS platform and the shared security model
- Define the billing, account management, and pricing models
- Identify sources of documentation or technical assistance, for example, whitepapers or support tickets
- Describe basic or core characteristics of deploying and operating in the AWS Cloud
- Identify situations where a company should choose the cloud, and why
- Differentiate between on-premises and cloud infrastructure
- Identify how to migrate resources from on-premises infrastructure to cloud infrastructure

These outcomes are consistent with those of the AWS Certified Cloud Practitioner exam.

Duration

The course duration is approximately 60 hours when delivered synchronously by an educator.

Intended Audience

This is an introductory-level course intended for students of AWS Academy member institutions who seek an overall understanding of cloud computing skills.

Student Prerequisites

This is an entry-level course, but students should possess the following:

- General IT technical knowledge
- General IT business knowledge

Delivery Methods

Learning materials are provided to support synchronous, instructor-led delivery in person or online.

Educator Prerequisities

There are no prerequisities to facilitate this course. However, prior to facilitating this course, educators are recommended to complete the *AWS Academy Cloud Foundations* course, pass the AWS Certified Cloud Practitioner exam, and participate in an AWS "Ready-to-Teach" Webinar Series.

This course utilizes the AWS Academy Learner Labs environment to provide students with hands-on practical lab activities that utilize AWS services to explore and build cloud technologies. Educators are recommended to familiarize themselves with the lab environment.

Learning Resources

- Educator guide
- Student guide
- Activity worksheets
- Lab exercises
- Module quizzes
- End-of-course assessment

Course Contents

The following table includes all course content and activities with suggested durations.

Unit 1: Cloud Structure and Features	2 weeks
Module 1: Global Infrastructure	
Lecture and discussion	50 minutes
Activity: Introduction to Cloud Computing	30 minutes
Activity: Using Cloud Services	30 minutes
Module quiz	15 minutes
Module 2: Structures of the Cloud	
Lecture and discussion	50 minutes
Activity: Visualizing the AWS Global Infrastructure	30 minutes
Activity: Types of Cloud Services	30 minutes
Module quiz	15 minutes
Unit 2: Storing and Sharing Content in the Cloud	**4 weeks**
Module 3: AWS Console	
Lecture and discussion	50 minutes
Activity: Learning the AWS Core Services	60 minutes
Activity: AWS Service Case Studies	20 minutes
Module quiz	15 minutes
Module 4: Virtual Servers	
Lecture and discussion	50 minutes
Activity: All About Amazon EC2, Amazon S3, and DNS	30 minutes
Lab: Launching an EC2 Instance	30 minutes
Lab: Creating an S3 Bucket	30 minutes
Module quiz	15 minutes
Module 5: Content Delivery	
Lecture and discussion	50 minutes
Activity: Content Distribution	30 minutes
Lab: Using CloudFront as a CDN for a Website	40 minutes
Module quiz	15 minutes
Module 6: Virtual Storage	
Lecture and discussion	50 minutes
Activity: All About Amazon EBS	45 minutes
Activity: Amazon EBS Use Cases	20 minutes
Lab: Attaching an EBS Volume	20 minutes
Module quiz	15 minutes

Unit 3: Securing and Monitoring in the Cloud	3 weeks
Module 7: Security I	
Lecture and discussion	50 minutes
Activity: Overview of IAM	45 minutes
Activity: Cybersecurity and Society	30 minutes
Lab: Introduction to IAM	40 minutes
Module quiz	15 minutes
Module 8: Security II	
Lecture and discussion	50 minutes
Activity: AWS Cloud Security Basics	40 minutes
Activity: AWS Artifact and Compliance Hunt	30 minutes
Module quiz	15 minutes
Module 9: Monitoring the Cloud	
Lecture and discussion	50 minutes
Activity: CloudTrail, CloudWatch, and AWS Config	40 minutes
Lab: Creating a CloudWatch Alarm That Initiates an Amazon SNS Message	30 minutes
Module quiz	15 minutes
Unit 4: Data Management	**3 weeks**
Module 10: Databases	
Lecture and discussion	50 minutes
Activity: Database Engineers	50 minutes
Lab: Creating an Amazon RDS Database Instance	20 minutes
Module quiz	15 minutes
Module 11: Load Balancers and Caching	
Lecture and discussion	50 minutes
Activity: ElastiCache and ELB Advertisement	60 minutes
Lab: Using Load Balancers	20 minutes
Module quiz	15 minutes
Module 12: Elastic Beanstalk and CloudFormation	
Lecture and discussion	50 minutes
Activity: What Are Elastic Beanstalk and CloudFormation?	45 minutes
Lab: Using Elastic Beanstalk and CloudFormation	45 minutes
Module quiz	15 minutes

Unit 5: Managing and Optimizing Cloud Features	4 weeks
Module 13: Emerging Technologies in the Cloud	
Lecture and discussion	50 minutes
Activity: AI, Cloud Computing, and Society	45 minutes
Activity: Emerging Technologies and the Cloud	30 minutes
Module quiz	15 minutes
Module 14: Billing and Support	
Lecture and discussion	50 minutes
Activity: AWS Support Plans and AWS Organizations	30 minutes
Lab: AWS Simple Monthly Calculator	15 minutes
Module quiz	15 minutes
Module 15: Other Cloud Features	
Lecture and discussion	50 minutes
Activity: AWS Services Experts	45 minutes
Activity: Blockchain Discussion	45 minutes
Module quiz	15 minutes
Module 16: Optimizing the Cloud with the AWS CDK	
Lecture and discussion	50 minutes
Activity: AWS CDK Infomercial	50 minutes
Activity: AWS CDK Demo	50 minutes
Module quiz	15 minutes
End-of-Course Assessment	**45 minutes**

Module Objectives

The following table includes course objectives for each module.

Module Title	Learning Objectives
Module 1: Global Infrastructure	• Define cloud computing and its impacts • Identify the benefits of cloud computing • Compare the major services offered by cloud computing providers
Module 2: Structures of the Cloud	• Recognize the types of cloud computing • Compare types of cloud computing • Explain the purpose of a Region, Availability Zone, and edge location • Identify connections among Regions, Availability Zones, and edge locations
Module 3: AWS Console	• Identify features and functions of commonly used AWS services • Access and navigate to commonly used AWS services • Analyze how AWS services are used in real-world industries

Module Title	Learning Objectives
Module 4: Virtual Servers	• Explain how an Amazon Simple Storage Service (Amazon S3) bucket and Amazon Elastic Compute Cloud (Amazon EC2) instance interact to allow for website hosting • Explain the functions of DNS • Create an S3 bucket • Create an EC2 instance that hosts a simple website
Module 5: Content Delivery	• Recognize the benefits of a content delivery network (CDN) • Explain the uses of a CDN • Configure an Amazon CloudFront distribution and attach it to a website
Module 6: Virtual Storage	• Recognize the benefits, features, and use cases of the four types of Amazon Elastic Block Store (Amazon EBS) volumes • Analyze a use case and recommend the best type of virtual storage for the particular situation • Create an EBS volume and attach it to an EC2 instance
Module 7: Security I	• Recognize best practices for AWS Identity and Access Management (IAM) • Analyze the cultural and societal impacts of cloud security • Differentiate among a role, user, and policy in cloud security • Use a process to resolve vulnerabilities in a web server
Module 8: Security II	• Compare the uses of AWS Shield and AWS WAF • Identify the best cloud security service for a given scenario • Explain functions and features of Amazon Inspector and AWS Artifact
Module 9: Monitoring the Cloud	• Use Amazon CloudWatch to set up a text alert event • Compare AWS CloudTrail and CloudWatch
Module 10: Databases	• Compare online transaction processing (OLTP) and online analytic processing (OLAP) • Compare relational and nonrelational databases
Module 11: Load Balancers and Caching	• Describe the benefits of caching data • Explain the purpose of Amazon ElastiCache • Attach a load balancer to a webpage • Evaluate the performance of a load balancer • Describe features and benefits of load balancing
Module 12: Elastic Beanstalk and CloudFormation	• Describe features and uses of AWS Elastic Beanstalk and AWS CloudFormation • Create an application using Elastic Beanstalk • Use a template and CloudFormation to build a virtual private cloud (VPC)
Module 13: Emerging Technologies in the Cloud	• Define machine learning • Discuss the impact of machine learning on cloud computing • Identify potential use cases for emerging technology in the cloud

Module Title	Learning Objectives
Module 14: Billing and Support	• Use the AWS Simple Monthly Calculator to estimate the cost of a cloud architecture • Recommend the best AWS Support plan for a given situation • Identify the benefits of using AWS Organizations and consolidated billing both for cost savings and easier IAM permissions management
Module 15: Other Cloud Features	• Identify cloud services that can analyze and protect data, and manage networks • Explain benefits of blockchain technologies
Module 16: Optimizing the Cloud with the AWS CDK	• Explain the infrastructure of the AWS Cloud Development Kit (AWS CDK) • Use the AWS CDK to create an application