# Course description

In this course, you learn how to use the AWS SDK to develop secure and scalable cloud applications using multiple AWS services such as Amazon DynamoDB, Amazon Simple Storage Service, and AWS Lambda. You explore how to interact with AWS using code and learn about key concepts, best practices, and troubleshooting tips.

* Course level: Intermediate
* Duration: 5 days

# Activities

This course includes presentations, hands-on labs, demonstrations, and group exercises.

# Course objectives

In this course, you will learn to:

* Set up the AWS SDK and developer credentials for Java, C#/.NET, and Python
* Interact with AWS services and develop solutions by using the AWS SDK
* Use AWS Identity and Access Management (IAM) for service authentication
* Use Amazon Simple Storage Service (Amazon S3) and Amazon DynamoDB as data stores
* Integrate applications and data by using AWS Lambda, Amazon API Gateway, Amazon Simple Queue Service (Amazon SQS), Amazon Simple Notification Service (Amazon SNS), and AWS Step Functions
* Use Amazon Cognito for user authentication
* Use Amazon ElastiCache to improve application scalability
* Leverage the CI/CD pipeline to deploy applications on AWS

# Intended audience

This course is intended for:

* Intermediate software developers

# Prerequisites

We recommend that attendees of this course have:

* In-depth knowledge of at least one high-level programming language
* Working knowledge of core AWS services and public cloud implementation

# Enroll today

Visit [aws.training](http://www.aws.training/training/schedule?courseId=10017) to find a class today.

# Course outline

Day 1:

Module 0: Course Overview

* + Agenda
  + Introductions
  + Student resources

Module 1: Introduction to AWS

* + Introduction to the AWS Cloud
  + Cloud scenarios
  + Infrastructure overview
  + Introduction to AWS foundation services

Module 2: Introduction to Developing on AWS

* + Getting started with developing on AWS
  + Introduction to developer tools
  + Introduction to management tools

Module 3: Introduction to AWS Identity and Access Management

* + Shared responsibility model
  + Introduction to IAM
  + Use authentication and authorization

Module 4: Introduction to the Lab Environment

* + Introduction to the lab environment
  + Lab 1: Getting started and working with IAM

Day 2:

Module 5: Developing Storage Solutions with Amazon Simple Storage Service

* + Overview of AWS storage options
  + Amazon S3 key concepts
  + Best practices
  + Troubleshooting
  + Scenario: Building a complete application
  + Lab 2: Developing storage solutions with Amazon S3

Module 6: Developing Event-Driven Solutions with AWS Lambda

* + What is serverless computing?
  + Introduction to AWS Lambda
  + Key concepts
  + How Lambda works
  + Use cases
  + Best practices
  + Scenario: Build an end-to-end app

Day 3:

Module 7: Developing Solutions with Amazon API Gateway

* + Introduction to Amazon API Gateway
  + Developing with API Gateway
  + Best practices
  + Introduction to AWS Serverless Application Model
  + Scenario: Building an end-to-end app
  + Lab 4: Developing event-driven solutions with AWS Lambda

Module 8: Developing Solutions with AWS Step Functions

* + Understanding the need for Step Functions
  + Introduction to AWS Step Functions
  + Use cases

Day 4:

Module 9: Developing Solutions with Amazon Simple Queue Service and Amazon Simple Notification Service

* + Why use a queueing service?
  + Developing with Amazon Simple Queue Service
  + Developing with Amazon Simple Notification Service
  + Developing with Amazon MQ
  + Lab 5: Developing messaging solutions with Amazon SQS and Amazon SNS

Module 10: Developing Secure Applications

* + Securing your applications
  + Authenticating your applications to AWS
  + Authenticating your customers
  + Scenario: Building an end-to-end app

Day 5:

Module 11: Introduction to Spark

* Big Data Analytics with Batch & Real-time Processing
* Why Spark is needed?
* What is Spark?
* How Spark differs from other frameworks?
* Core Spark Concept
* Spark Architecture

Module 12: Deep Dive into Spark

* Framework
* Spark Web UI
* Introduction to Spark Shell
* Writing your first Spark Job
* Submitting Spark Job
* Mapreduce using Pyspark
* RDDs

Day 6:

Module 13 : Introduction to RDDs

* Probable Solution & How RDD Solves the Problem
* What is RDD, It’s Operations, Transformations & Actions
* Data Loading and Saving Through RDDs
* Key-Value Pair RDDs
* Other Pair RDDs, Two Pair RDDs
* RDD Lineage
* RDD Persistence

Day 7:

Module 14 : DataFrames and Spark SQL

* Need for Spark SQL
* What is Spark SQL?
* Spark SQL Architecture
* Spark Session in Spark SQL

Module 15: DataFrames and Spark SQL – Continue

* User Defined Functions
* Data Frames & Datasets
* Interoperating with RDDs
* JSON and Parquet File Formats
* Loading Data through Different Sources

Day 8 & Day 9:

Module 16: AWS Glue

* DataBrew
* Glue Studio
* Python/Java/Scala ETL jobs
* Reading from and writing to – S3, RedShift, RDS
* Crawler
* Catalog
* Redshift Column store, fetching data and writing data
* RDS, row store, fetching and writing data with RDS
* Athena

Day 10:

Module 17: Cloud Formation & Quick Sight

* Cloud Formation Introduction
* Athena basic
* Understanding automation basic
* Quick Sight introduction
* Quick sight to Athena, RedShift, RDS