**Topics include:**

**Module 1 Course and AWS Overview**  
   Lesson 1 Course Overview  
   Lesson 2 Cloud Services  
   Lesson 3 Setting up a Lab

**Module 2 AWS Foundational Services**  
   Lesson 4 AWS CLI & SDK  
   Lesson 5 Identity and Access Management (IAM)  
   Lesson 6 Virtual Private Cloud (VPC)  
   Lesson 7 Elastic Compute Cloud (EC2)  
   Lesson 8 Route 53 DNS

**Module 3 Database and Storage Services**  
   Lesson 9 Simple Storage Service (S3)  
   Lesson 10 Databased (RDS / EC2)  
   Lesson 11 DynamoDB (NoSQL)

**Module 4 Messaging Services**  
   Lesson 12 Simple Queue Service (SQS)  
   Lesson 13 Simple Notification Service (SNS)

**Module 5 Execution Services**  
   Lesson 14 Lambda--Serverless Compute  
   Lesson 15 Elastic Beanstalk  
   Lesson 16 Kinesis  
   Lesson 17 API Gateway

**Module 6 Developing in AWS**  
   Lesson 18 CloudFormation  
   Lesson 19 AWS Developer Tools  
   Lesson 20 AWS Shared Responsibility Model

**Lesson 1**  
Lesson 1, Course Overview. This lesson will lay out the purpose and areas of focus of this course, as well as setting expectations and expected outcomes.

**Lesson 2**  
In Lesson 2, Cloud Services will answer the question "why should we move our applications to the cloud? Wouldn’t it be easier to just run them in-house?" A general overview of Amazon Web Services and some of the services will be provided.

**Lesson 3**  
Lesson 3, Setting up a Lab is exactly that: a walk-through of setting up a lab so you can follow along with the demonstrations.

**Lesson 4**  
In Lesson 4, AWS CLI &amp; SDK, scripting and automation with the CLI will be discussed, as well as the AWS software development kit. The SDK allows you to interact with AWS services using one of several popular programming languages  such as Node.js or Python.

**Lesson 5**  
Lesson 5, Identity and Access Management. This lesson discusses security, including at a services authentication level. The IAM service provides the means to create user accounts that can be used for either interactive or programmatic access to AWS services, which will be covered.

**Lesson 6**  
In Lesson 6, Virtual Private Cloud, VPCs, how they’re created, and how networking and security are applied will be discussed.

**Lesson 7**  
Lesson 7, Elastic Compute Cloud, covers what EC2 is, where the operating systems of those instances come from, and discuss how to get access to your servers.

**Lesson 8**  
In Lesson 8, Route 53 DNS, we will demonstrate Route53, which is a managed domain name system service offered by AWS. The lesson will show how it distinguishes itself through its ability to offer query responses based on the state of other AWS services as well as its ease of use.

**Lesson 9**  
Lesson 9, Simple Storage Service, will go over one of the most popular service. From generic file storage to offering static website content, S3 is a one stop shop for storing files, which will be demonstrated here.

**Lesson 10**  
In Lesson 10, Databases, the relational database service from AWS will be covered. The RDS service offers a managed database service where you access an instance of your chosen database software, running on an operating system on a server, bothmanaged by Amazon.

**Lesson 11**  
Lesson 11, DynamoDB, will demonstrate this fully managed service, and show how it allows for synchronous replication across multiple regions.

**Lesson 12**  
In Lesson 12, Simple Queue Service, will demonstrate this distributed message queueing service. It is a managed service that you can interact with programmatically to store messages for later processing.

**Lesson 13**  
Lesson 13, Simple Notification Service, demonstrates AWS SNS, which is a notification service for sending messages. AWS SNS follows the publisher subscriber, or provider consumer, methodology and can deliver messages through mobile push notifications, email and SMS, which will be shown here.

**Lesson 14**  
In Lesson 14, Lambda--Serverless Compute, will discuss what Lambda is and how to use it. AWS Lambda is all about serverless code execution. If you think back to your computer science classes where you learned about lambda abstraction or anonymous functions that take a single input, this is kind of like that but, of course, these functions are not anonymous.

**Lesson 15**  
Lesson 15, Elastic Beanstalk, will demonstrate AWS Elastic Beanstalk, which is an orchestration service. It provides a layer of abstraction between the underlying OS/server and your application. For example, if you have a web application written in PHP, elastic beanstalk can be used to run your code, automatically provisioning the underlying EC2 instance, security settings, load balancers and auto-scaling.

**Lesson 16**  
In Lesson 16, Kinesis, ingestion of real-time data for instant processing and analysis will be demonstrated.

**Lesson 17**  
Lesson 17, API Gateway, will discuss this fully-managed service that allows you to create secure APIs that scale. API Gateway acts as an entry point to your applications running across various AWS services such as Lambda, EC2 or even files in S3.

**Lesson 18**  
In Lesson 18, CloudFormation, will take a look at the CloudFormation components and walk through using CloudFormation to provision and update our infrastructure.

**Lesson 19**  
Lesson 19, AWS Developer Tools, covers several AWS services. These services are targeted at developers and managing code. For example, CodeCommit is a managed git repository, CodeBuild can be used to build and test your code, and CodeDeploy can be used for continuous integration.

**Lesson 20**  
In Lesson 20, AWS Shared Responsibility Model reviews Amazon’s published shared responsibility model, and outline what Amazon is responsible for and what you are responsible for.

**Necessary knowledge**

* One or more years of hands-on experience developing and maintaining an AWS-based application
* In-depth knowledge of at least one high-level programming language
* Understanding of core AWS services, uses, and basic AWS architecture best practices
* Proficiency in developing, deploying, and debugging cloud-based applications using AWS
* Ability to use the AWS service APIs, AWS CLI, and SDKs to write applications
* Ability to identify key features of AWS services
* Understanding of the AWS shared responsibility model
* Understanding of application lifecycle management
* Ability to use a CI/CD pipeline to deploy applications on AWS
* Ability to use or interact with AWS services
* Ability to apply a basic understanding of cloud-native applications to writecode
* Ability to write code using AWS security best practices (e.g., not using secret and access keys in the code, instead using IAM roles)
* Ability to author, maintain, and debug code modules on AWS
* Proficiency writing code for serverless applications
* Understanding of the use of containers in the development process
* Understanding of the AWS shared responsibility model
* Understanding of application lifecycle management
* Ability to use a CI/CD pipeline to deploy applications on AWS
* Ability to use or interact with AWS services
* Ability to apply a basic understanding of cloud-native applications to write code
* Ability to write code using AWS security best practices (e.g., not using secret and access keys in the code, instead using IAM roles)
* Ability to author, maintain, and debug code modules on AWS
* Proficiency writing code for serverless applications
* Understanding of the use of containers in the development process

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aws ec2 describe-instances --output text --query 'Reservations[\*].Instances[\*].[Placement.AvailabilityZone,Tags[?Key=='Name'].Value | [0], InstanceId,State.Name]'

Virtual private Cloud

* Internet Gateway . to public internet
* AWS Services that can be launched into VPC
* AWS Date pipeline ,EC2, Elastic Beanstalk
* Elastic Load Balaincing
* Elastic Cache
* AWS OpsWorks
* RDS
* RedShift
* Workspaces

Access sing CLI and Web UI.

Pricing

VPC : Free

Ec2 Instance , NAT Gateway

, VPN Connections

VPC Soft Limits

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Lesson – 6 – VPC Networking and Security

* Subnets
* Route Tables
* Security Groups
* Network ACL (Access Control List)
* NAT Gateway
* Internet Gateway
* Egress only
* Elastic IP

Associate subnets to route tables.

VPC Main Route Table

Cant delete or replace

VPC Connecting Option

Internet

Virtual Gateway IP Sec

VPC Peering

Direct Connect

Subnet Network Access Control List

VPC Security Groups

6.3 Default VPC Review

Three Subnets – different zones

Outbound tools and inbound tools