

# Course AWS Cloud Architecting

## Syllabus

### A. Course Description

This course covers the fundamentals of building IT infrastructure on AWS. The course teaches students how to optimize use of the AWS Cloud by understanding AWS services and how they fit into cloud-based solutions.

### B. Course Overview

#### 1. Course Composition

This course is composed of :

40 % of theory:

- Lecture materials with activities and demonstrations
- Digital lesson content
- Video demos

60 % of practice:

- Online multiple-choice knowledge checks
- Lab exercises
- Lab assessments
- Optional Capstone project
- Example solutions

#### 2. Target Skills and Learning Outcomes

The skills that should be acquired while taking this course are summarized in the following table

Skills	Learning outcomes
<i>Cloud Architecting</i>	Understand Cloud Architecting
<i>Storage</i>	S3
<i>Compute</i>	EC2
<i>Database</i>	RDS, DynamoDB
<i>Network</i>	VPC (Virtual Private Cloud), Firewalls, VPN
<i>Security</i>	Identity & Access Management
<i>Elasticity, High Availability &amp; Monitoring</i>	Autoscaling, DNS, Alarms
<i>Automation</i>	Infrastructure As Code
<i>Caching strategies</i>	At Edge, web sessions, databases, CDN



<i>Decoupled Architecture</i>	Push & Pull architectures
<i>Microservices &amp; Serverless</i>	Serverless ecosystem
<i>Disaster recovery strategies</i>	RTO (Recovery Time Objective, Recovery Point Objective)

### C. Assessment Model

The evaluation will be done using:

- Quiz (40 %)
- Lab Assessments (60 %)

## D. References & Resources

<https://aws.amazon.com/fr/training/course-descriptions/architect/>

## E. Hardware and Software

No specific requirements

An account will be created by the teacher for each student on the AWS Academy platform.

## F. Prerequisites

- A working knowledge of distributed systems
- Familiarity with general networking concepts
- A working knowledge of multi-tier architectures
- Familiarity with cloud computing concepts

## G. Sessions Contents

		Lecture	Practical	Total
<b>Module 1 – Welcome to AWS Academy Cloud Architecting</b>		<b>30</b>		<b>30</b>
Lecture or Video	Course objectives and overview			
Lecture or Video	Café business case introduction			
Lecture or Video	Roles in cloud computing			
<b>Module 2 – Introducing Cloud Architecting</b>		<b>55</b>	<b>10</b>	<b>65</b>
Lecture or Video	What is cloud architecting?			
Lecture or Video	The AWS Well-Architected Framework			
Lecture or Video	Best practices for building solutions on AWS			
Lecture or Video	AWS global infrastructure			
Discussion (Optional)	Course capstone project		5 (optional)	
Knowledge Check	Cloud Architecting		10	
<b>Module 3 – Adding a Storage Layer</b>		<b>60</b>	<b>115</b>	<b>175</b>
Lecture or Video	The simplest architecture			
Lecture or Video	Using Amazon S3			
Demo	Demonstration: Amazon S3 Versioning		10	
Guided Lab	Guided Lab: Hosting a Static Website		20	
Lecture or Video	Storing data in Amazon S3			
Lecture or Video	Moving data to and from Amazon S3			



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Demo	Demonstration: Amazon S3 Transfer Acceleration		10	
Lecture or Video	Choosing Regions for your architecture			
Challenge Lab	Challenge Lab: Creating a Static Website for the Café		60	
Knowledge Check	Storage Layer		10	
Sample Question	Sample Exam Question		5	
<b>Module 4 – Adding a Compute Layer</b>		<b>85</b>	<b>125</b>	<b>210</b>
Lecture or Video	Architectural need			
Lecture or Video	Adding compute with Amazon EC2			
Lecture or Video	Choosing an Amazon Machine Image (AMI) to launch an Amazon EC2 instance			
Lecture or Video	Selecting an Amazon EC2 instance type			
Lecture or Video	Using user data to configure an EC2 instance			
Demo	Demonstration: Configuring an EC2 Instance with User Data		20	
Lecture or Video	Adding storage to an Amazon EC2 instance			
Guided Lab	Guided Lab: Introducing Amazon Elastic File System (Amazon EFS)		20	
Lecture or Video	Amazon EC2 pricing options			
Demo	Demonstration: Reviewing the Spot Instance History Page		10	
Lecture or Video	Amazon EC2 considerations			
Challenge Lab	Challenge Lab: Creating a Dynamic Website for the Café		60	
Knowledge Check	Compute Layer		10	
Sample Question	Sample Exam Question		5	
<b>Module 5 – Adding a Database Layer</b>		<b>75</b>	<b>135</b>	<b>210</b>
Lecture or Video	Architectural need			
Lecture or Video	Database layer considerations			
Lecture or Video	Amazon Relational Database Service (Amazon RDS)			
Guided Lab	Guided Lab: Creating an Amazon RDS database		20	
Demo	Demonstration: Amazon RDS Automated Backup and Read Replicas		15	
Lecture or Video	Amazon DynamoDB			
Discussion	Which database should the café use?		5	
Lecture or Video	Database security controls			



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Lecture or Video	Migrating data into AWS databases			
Challenge Lab	Challenge Lab: Migrating a Database to Amazon RDS		80	
Knowledge Check	Database Layer		10	
Sample Question	Sample Exam Question		5	
<b>Module 6 – Creating a Networking Environment</b>		<b>65</b>	<b>165</b>	<b>230</b>
Lecture or Video	Architectural need			
Lecture or Video	Creating an AWS networking environment			
Lecture or Video	Connecting your AWS networking environment to the internet			
Demo	Demonstration: Creating a Virtual Private Cloud Using the AWS Console		30	
Demo (Optional)	Demonstration: Creating a Virtual Private Cloud Using the AWS CLI		30 (optional)	
Lecture or Video	Securing your AWS networking environment			
Guided Lab	Guided Lab: Creating a Virtual Private Cloud		30	
Challenge Lab	Challenge Lab: Creating a VPC Networking Environment for the Café		90	
Knowledge Check	Networking Environment		10	
Sample Question	Sample Exam Question		5	
<b>Module 7 – Connecting Networks</b>		<b>75</b>	<b>50</b>	<b>125</b>
Lecture or Video	Architectural need			
Lecture or Video	Connecting your remote network with AWS Site-to-Site VPN			
Lecture or Video	Connecting your remote network with AWS Direct Connect			
Lecture or Video	Connecting virtual private clouds (VPCs) in AWS with VPC peering			
Guided Lab	Guided Lab: Creating a VPC Peering Connection		20	
Lecture or Video	Scaling your VPC network with AWS Transit Gateway			
Activity	AWS Transit Gateway		15	
Lecture or Video	Connecting your VPC to supported AWS services			
Knowledge Check	Connecting Networks		10	
Sample Question	Sample Exam Question		5	
<b>Module 8 – Securing User and Application Access</b>		<b>80</b>	<b>125</b>	<b>205</b>



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Lecture or Video	Architectural need			
Lecture or Video	Account users and AWS Identity and Access Management (IAM)			
Activity	Examining IAM policies		15	
Lecture or Video	Organizing users			
Lecture or Video	Federating users			
Demo	Demonstration: EC2 Instance Profile		15	
Lecture or Video	Multiple accounts			
Challenge Lab	Challenge Lab: Controlling Account Access by Using IAM		80	
Knowledge Check	User and Application Access		10	
Sample Question	Sample Exam Question		5	
<b>Module 9 - Implementing Elasticity, High Availability, and Monitoring</b>		<b>85</b>	<b>225</b>	<b>310</b>
Lecture or Video	Architectural need			
Lecture or Video	Scaling your compute resources			
Demo	Demonstration: Creating Scaling Policies for Amazon EC2 Auto Scaling		30	
Lecture or Video	Scaling your databases			
Lecture or Video	Designing an environment that's highly available			
Demo	Demonstration: Creating a Highly Available Web Application		30	
Demo	Demonstration: Amazon Route 53		20	
Guided Lab	Guided Lab: Creating a Highly Available Environment		40	
Lecture or Video	Monitoring			
Challenge Lab	Challenge Lab: Creating a Scalable and Highly Available Environment for the Café		90	
Knowledge Check	Elasticity, High Availability and Monitoring		10	
Sample Question	Sample Exam Question		5	
<b>Module 10 – Automating Your Architecture</b>		<b>80</b>	<b>145</b>	<b>225</b>
Lecture or Video	Architectural need			
Lecture or Video	Reasons to automate			
Lecture or Video	Automating your infrastructure			
Demo	Demonstration: Analyzing AWS CloudFormation Template Structure and Creating a Stack		20	
Guided Lab	Guided Lab: Automating Infrastructure Deployment with AWS CloudFormation		20	



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Lecture or Video	Automating deployments			
Lecture or Video	AWS Elastic Beanstalk			
Challenge Lab:	Challenge Lab: Automating Infrastructure Deployment		90	
Knowledge Check	Automation		10	
Sample Question	Sample Exam Question		5	
<b>Module 11 – Caching Content</b>		<b>65</b>	<b>45</b>	<b>110</b>
Lecture or Video	Architectural need			
Lecture or Video	Overview of caching			
Lecture or Video	Edge caching			
Guided Lab	Guided Lab: Streaming Dynamic Content Using Amazon CloudFront		30	
Lecture or Video	Caching web sessions			
Lecture or Video	Caching databases			
Knowledge Check	Caching Content		10	
Sample Question	Sample Exam Question		5	
<b>Module 12 – Building Decoupled Architectures</b>		<b>60</b>	<b>15</b>	<b>75</b>
Lecture or Video	Architectural need			
Lecture or Video	Decoupling your architecture			
Lecture or Video	Decoupling with Amazon Simple Queue Service (Amazon SQS)			
Lecture or Video	Decoupling with Amazon Simple Notification Service (Amazon SNS)			
Lecture or Video	Sending messages between cloud applications and on-premises with Amazon MQ			
Knowledge Check	Decoupled Architecture		10	
Sample Question	Sample Exam Question		5	
<b>Module 13 – Building Microservices and Serverless Architectures</b>		<b>90</b>	<b>190</b>	<b>280</b>
Lecture or Video	Architectural need			
Lecture or Video	Introducing microservices			
Lecture or Video	Building microservice applications with AWS container services			
Guided Lab (Optional)	<i>Guided Lab: Breaking a Monolithic Node.js Application into Microservices</i>		180 (optional)	
Lecture or Video	Introducing serverless architectures			
Lecture or Video	Building serverless architectures with AWS Lambda			
Demo	Demonstration: Creating an AWS Lambda Function		15	



Demo	Demonstration: Using AWS Lambda with Amazon S3		30	
Guided Lab	Guided Lab: Implementing a Serverless Architecture on AWS		40	
Lecture or Video	Extending serverless architectures with Amazon API Gateway			
Lecture or Video	Orchestrating microservices with AWS Step Functions			
Challenge Lab	Challenge Lab: Implementing a Serverless Architecture for the Café		90	
Knowledge Check	Microservices and Serverless		10	
Sample Question	Sample Exam Question		5	
<b>Module 14 – Planning for Disaster</b>		<b>60</b>	<b>60</b>	<b>120</b>
Lecture or Video	Architectural need			
Lecture or Video	Disaster planning strategies			
Lecture or Video	Disaster recover patterns			
Guided Lab	Guided Lab: Hybrid Storage and Data Migration with AWS Storage Gateway File Gateway		45	
Knowledge Check	Disaster Planning		10	
Sample Question	Sample Exam Question		5	
<b>Module 15 – Bridging to Certification</b>		<b>30</b>		<b>30</b>
Lecture or Video	Certification exam resources			
Lecture or Video	Additional resources			
Discussion (Optional)	Course capstone project		5 (optional)	
Capstone Project (Optional)	Capstone Project		300 (optional)	
<b>Total</b>		<b>995</b>	<b>1405</b>	<b>2400</b>

## H. Class Policies

<<cheating is not allowed....>>

