

★ **AWS – Amazon Web Services Syllabus**

Module 1: Introduction to AWS

- What is AWS?
 - Global Infrastructure: Regions, AZs, Edge Locations
 - How AWS Cloud works
 - AWS Free Tier and pricing basics
 - AWS Management Console
 - Shared Responsibility Model
 - AWS Well-Architected Framework (2025 version)
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Module 2: IAM – Identity and Access Management

- Users, Groups, Roles
 - Permissions & Policies
 - MFA (Multi-Factor Authentication)
 - Access Keys & CLI setup
 - IAM Best Practices
 - Hands-on Labs:
 - ✓ Create IAM users & groups
 - ✓ Apply policies
 - ✓ Secure root account
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Module 3: EC2 – Elastic Compute Cloud (Servers)

- What is EC2?
- EC2 Instance Types (General, Compute, Memory optimized)
- AMIs
- Security Groups
- SSH & Key Pairs
- Elastic IP
- EC2 Pricing Models:
 - On-demand
 - Reserved
 - Spot
 - Savings Plan

Hands-on Labs:

- Launch Linux & Windows EC2
 - Install web server (Apache / Nginx)
 - Create EC2 snapshots & AMIs
 - Configure Security Groups
 - Connect using SSH
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Module 4: EBS, EFS, Instance Store (Storage for EC2)

- EBS Types (gp3, io2, sc1, st1)
- Snapshots
- Volume resizing
- EFS (Elastic File System)
- Instance Store comparison

Hands-on Labs

- Create & attach EBS Volumes
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- Create Snapshots
 - Configure EFS for multiple EC2s
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Module 5: S3 – Simple Storage Service (Object Storage)

- Buckets, Objects
- S3 Security: Policies & Bucket ACL
- Versioning
- Lifecycle Management
- Storage Classes
 - Standard
 - IA
 - Glacier
- S3 Static Website Hosting
- Cross-Region Replication (CRR)
- Pre-Signed URLs

Hands-on Labs

- Create buckets
 - Upload/Download files
 - Host a static website on S3
 - Enable versioning
 - Create lifecycle rule
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Module 6: Load Balancing & Auto Scaling

Elastic Load Balancer (ELB)

- Application Load Balancer (ALB)
- Network Load Balancer (NLB)
- Health Checks

Auto Scaling

- Auto Scaling Groups
- Launch Templates
- Scaling Policies

Hands-on Labs

- ALB with EC2 instances
 - Auto Scaling setup
 - Test scaling process
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Module 7: Amazon RDS (Databases)

- What is RDS?
- Supported databases: MySQL, PostgreSQL, MariaDB, Oracle
- Multi-AZ Architecture
- Read Replicas
- Backups & Snapshots
- Parameter Groups

Hands-on Labs

- Launch RDS MySQL database
 - Connect from EC2
 - Automate backups
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Module 8: DynamoDB (NoSQL Database)

- Tables, Items, Attributes
- Partition keys & Sort keys
- Read/Write capacity
- Streams
- Global Tables

Hands-on Labs

- Create DynamoDB table
- Query & Scan items

Module 9: AWS Networking (VPC)

- VPC Basics
- Subnets (Public & Private)
- Internet Gateway
- NAT Gateway
- Route Tables
- NACLs vs Security Groups
- VPC Peering
- VPC Flow Logs
- DNS with Route 53 (Basics)

Hands-on Labs

- Create a custom VPC
- Create Public & Private subnets
- Launch EC2 in VPC
- Configure routing

Module 10: Serverless Computing – Lambda & API**Gateway****Lambda**

- What is Serverless?
- Lambda triggers
- Layers
- Permissions

API Gateway

- REST APIs
- Integrating Lambda with API Gateway

Hands-on Labs

- Create Lambda function
- Build serverless API
- Test using Postman

Module 11: Containers – ECS & ECR (Optional)

- Docker on AWS
- ECR (Elastic Container Registry)
- ECS (Elastic Container Service)
- Fargate vs EC2 launch modes

Hands-on Labs

- Push Docker image to ECR
- Run container on ECS

Module 12: CloudFront (CDN)

- What is a CDN?
- Edge locations
- Distributions
- S3 + CloudFront website hosting

Hands-on:

- Create CloudFront distribution
- Secure S3 website with CDN

Module 13: CloudWatch Monitoring & Logging

- Metrics
- Logs
- Alarms
- Dashboards
- EventBridge overview

Hands-on:

- Setup alerts for EC2
- View logs in CloudWatch

Module 14: AWS Security, Encryption & Compliance

- KMS (Key Management Service)
- Secrets Manager
- WAF (Web Application Firewall)
- Shield
- Config Rules
- Compliance frameworks (SOC2, ISO, PCI)

Module 15: AWS Developer Tools (CI/CD Basics)

- CodeCommit
- CodeBuild
- CodePipeline
- Deploying a CI/CD pipeline

Module 16: Billing, Cost Management, & Pricing

- Pricing calculator
- Budgets
- Cost Explorer
- Tips for reducing cloud cost

Module 17: AWS Solutions Architecture (Mini Project Work)**Students build a complete cloud architecture:**

- VPC + Subnets
- EC2 + Load Balancer
- RDS database
- S3 bucket
- CloudFront
- IAM permissions
- CloudWatch alarms
- (Optional) Serverless Lambda + API Gateway

Module 18. Real-World Projects

- ✓ Hosting a Static Website on S3 & CloudFront
 - ✓ Deploying a Scalable Web Application
 - ✓ Implementing Auto Scaling with Load Balancer
 - ✓ Securing AWS Infrastructure with IAM & Security Groups
 - ✓ Deploying a Serverless Application with Lambda & API Gateway
 - ✓ Creating a Data Pipeline using S3, Glue, and Redshift
 - ✓ Setting Up Multi-Region Disaster Recovery Plan
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★ Resources

- Step-by-step lab manual
 - Notes
 - Cheat sheets: IAM / VPC / EC2 / S3 / Lambda
 - 5 Mini Projects
 - 1 Major Project (Architecture design)
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