Intermediate: Cloud Platform (AWS)

Description:

This course offers a comprehensive introduction to **Amazon Web Services (AWS)** for intermediate learners seeking to build, deploy, and scale cloud-native applications. It covers key AWS services including **EC2**, **S3**, **RDS**, **Lambda**, **VPC**, and **CloudFormation**, enabling students to develop hands-on experience with modern cloud infrastructure. Through real-world projects, students will learn how to automate deployment, monitor infrastructure, enforce security best practices, and optimize for cost and performance.

Learning Outcomes:

By completing this course, students will be able to:

- Understand AWS cloud computing fundamentals and architecture.
- Launch and manage virtual servers (EC2) and serverless functions (Lambda).
- Implement secure cloud storage using S3.
- Use RDS for relational database management.
- Design virtual networks with VPC and configure security policies.
- Automate infrastructure with CloudFormation.
- Monitor applications and services using CloudWatch.
- Apply cost optimization strategies to real-world AWS projects.

Course Duration:

- **Total Duration:** 6 Weeks
- **Sessions per Week:** 2
- **Session Length:** 1.5 hours
- **Total Instructional Hours:** 18 hours

6-Week Learning Plan

Week 1: AWS Foundations & Identity Management

Topics:

- AWS Global Infrastructure
- IaaS, PaaS, SaaS in AWS context
- AWS Management Console & CLI
- IAM (Users, Groups, Roles, Policies)

Hands-on:

- AWS Free Tier account setup
- Create IAM users and apply policies

Week 2: Compute with EC2 & Serverless with Lambda

Topics:

- EC2: Launch, SSH, Security Groups, AMIs
- Auto Scaling and Elastic Load Balancer (ALB)
- Introduction to AWS Lambda and use cases

- Comparison of EC2 vs Lambda

Hands-on:

- Deploy EC2 instance with a basic web server
- Write and trigger a Lambda function using AWS Console

Week 3: Storage & Databases in AWS

Topics:

- S3 buckets, access policies, lifecycle rules
- RDS overview (MySQL/PostgreSQL engines)
- Backups, snapshots, and failover
- Connecting applications to RDS

Hands-on:

- Upload/download files to S3
- Create and connect to an RDS instance

Week 4: Networking & Security

Topics:

- Virtual Private Cloud (VPC): subnets, route tables, NAT
- Internet Gateways, Security Groups vs NACLs
- Identity-based and resource-based access control
- SSL and secure endpoints

Hands-on:

- Set up a custom VPC with public/private subnets

- Deploy secure services within the VPC

Week 5: Monitoring & Infrastructure as Code

Topics:

- CloudWatch for metrics, logs, alarms
- CloudTrail basics for auditing
- Introduction to AWS CloudFormation
- Writing and deploying CloudFormation templates

Hands-on:

- Create a CloudWatch dashboard
- Deploy a simple infrastructure stack using CloudFormation

Week 6: Final Project & Optimization

Topics:

- Cost Explorer and budgeting
- Cost optimization tools and Reserved Instances
- Project deployment checklist
- Review and documentation best practices

Final Project:

- Deploy a full-stack web application on AWS using EC2, S3, RDS, and Lambda
- Use CloudFormation for provisioning
- Implement logging and monitoring with CloudWatch

Final Deliverables:

- Deployed cloud-based project hosted on AWS
- GitHub repo with CloudFormation templates
- Architecture diagram and documentation (PDF)
- Performance/cost analysis report
- CodeHills Certificate of Completion

Course Fees (Pakistan):

- **Standard Fee:** PKR 15,000