6-Month Course

Cloud Computing

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24 Weeks (6 Months)

Cloud-ready professional capable of designing, deploying, and managing cloud environments (AWS, Azure, GCP)

Instructor-led + Hands-on Labs + Assignments + Case Studies

Module	Module Title
1	Cloud Fundamentals
2	Linux & Networking for Cloud
3	AWS Cloud Services
4	Microsoft Azure Essentials
	Revision & Internal Assessment
5	Google Cloud Platform
6	Cloud Security & Governance
7	Cloud Automation & DevOps Basics
8	Advanced Cloud Concepts & Multi-Cloud
	Final Evaluation

Module 1: Cloud Fundamentals (Week 1–2)

Content:

- Introduction to Cloud Computing: IaaS, PaaS, SaaS, FaaS
- Public, Private, Hybrid, and Multi-cloud Models
- Overview of Major Cloud Service Providers: AWS, Azure, GCP
- Cloud Economics, Pricing Models & Cost Optimization
- Cloud Adoption Strategies & Use Cases

Labs:

1. Set up free-tier accounts on AWS, Azure, and GCP
2. Explore cloud dashboards, services, and console navigation
3. Simple hands-on: Launch a VM and connect via SSH/RDP

Module 2: Linux & Networking for Cloud (Week 3–4)

Content:

- Linux Command Line Essentials (File Management, Users, Permissions)
- System Administration Basics (Services, Processes, Package Management)
- Networking Fundamentals: DNS, TCP/IP, Subnets, VPNs, Load Balancing
- Cloud Networking Concepts: VPC, Subnets, Gateways, Security Groups

Labs:

1. Set up and configure a Linux server instance in cloud
2. Configure basic network settings and test connectivity
3. Ping, traceroute, and analyze network traffic

Module 3: AWS Cloud Services (Week 5–8)

Content:

- AWS Core Services: EC2, S3, RDS, VPC, IAM
- Elastic Load Balancing & Auto Scaling
- Monitoring & Logging with CloudWatch & CloudTrail
- Security & IAM Best Practices

Labs:

1. Deploy a 2-tier application (Web + DB) on AWS
2. Configure auto-scaling and load balancing
3. Set up S3 storage, IAM roles, and permissions

Module 4: Microsoft Azure Essentials (Week 9–10)

Content:

- Azure Portal Navigation & Core Services
- Azure Virtual Machines & Storage Accounts
- Azure Virtual Networks, Subnets & Network Security Groups
- Azure Backup, Recovery, and Monitoring Tools

Labs:

1. Deploy a web application on Azure VM
2. Configure Azure Storage & Network Security
3. Set up monitoring alerts in Azure Monitor

Module 5: Google Cloud Platform (Week 11–12)

Content:

- GCP Overview & Compute Engine
- Google Storage & Cloud SQL
- Identity & Access Management (IAM) & Security Basics
- Monitoring & Logging in GCP

Labs:

1. Host a sample application on GCP Compute Engine
2. Configure Cloud Storage & Cloud SQL
3. Apply IAM roles and policies for security

Module 6: Cloud Security & Governance (Week 13–14)

Content:

- Shared Responsibility Model
- Identity & Access Management (IAM) & Role-Based Access Control (RBAC)
- Cloud Security Best Practices (Encryption, Key Management)
- Compliance & Data Backup/Disaster Recovery (DR) Strategies
- Multi-cloud Security Considerations

Labs:

1. Implement IAM policies for secure access
2. Enable encryption & backup for cloud resources
3. Simulate recovery from a cloud service outage

Module 7: Cloud Automation & DevOps Basics (Week 15–18)

Content:

- Introduction to Infrastructure as Code (Terraform, AWS CloudFormation)
- Configuration Management Basics (Ansible, Chef, Puppet)
- CI/CD Pipelines Introduction for Cloud Deployments
- Automation & Monitoring Best Practices

Labs:

1. Deploy infrastructure using Terraform scripts
2. Configure automated deployment pipelines with Jenkins/GitHub Actions
3. Practice configuration management with Ansible playbooks

Module 8: Advanced Cloud Concepts & Multi-Cloud (Week 19–20)

Content:

- Hybrid & Multi-cloud Architectures
- Cloud Cost Optimization & Billing Analysis
- Cloud Performance Tuning & Scalability Best Practices
- Serverless Computing: AWS Lambda, Azure Functions, GCP Cloud Functions

Labs:

1. Deploy serverless functions on AWS/Azure/GCP
2. Monitor costs & optimize cloud resource utilization
3. Set up multi-cloud connectivity between AWS and Azure

Module 9: Capstone Project – Cloud Implementation (Week 21–23)

Capstone Project Options:

- Multi-cloud Deployment of Enterprise Application
- Build & Secure an Enterprise Cloud Infrastructure
- Automate Cloud Infrastructure Using Terraform & CI/CD

- **Real-world case study and solution design**

Labs:

1. Complete deployment & configuration in a lab environment
2. Implement monitoring, security, and automation workflows
3. Document architecture & lessons learned

Module 10: Certification & Career Prep (Week 24)

- **Final Exam (Practical + Theory)**
- **Resume & Portfolio Development**
- **Interview Preparation: Cloud Scenario-based Questions**
- **Certification Guidance: AWS Solutions Architect, Azure Administrator, GCP Associate**

Labs:

1. Practical assessment: Deploy a multi-service application in cloud
2. Review lab exercises from all modules
3. Capstone presentation & peer review