Cloud Computing

Course Modules & Topics

🌐 Module 1: Introduction to Cloud Computing

- What is Cloud Computing?
- History and Evolution of Cloud
- Benefits and Challenges
- Service Models: IaaS, PaaS, SaaS
- Deployment Models: Public, Private, Hybrid, Community

□ Module 2: Cloud Infrastructure & Virtualization

- Basics of Virtualization
- Hypervisors: Type 1 vs Type 2
- Virtual Machines vs Containers
- Data Centers and Cloud Architecture

🚀 Module 3: Popular Cloud Service Providers

- Overview: AWS, Microsoft Azure, Google Cloud Platform (GCP)
- Account Setup & Free Tier Services
- Basic Navigation and Console Usage
- Global Infrastructure (Regions & Zones)

□ Module 4: Compute Services

- AWS EC2, Azure Virtual Machines, GCP Compute Engine
- Instance Types, Key Pairs, and SSH Access
- Auto-scaling and Load Balancing
- Pricing and Cost Optimization

Module 5: Storage Services

- Object Storage: S3, Blob, Cloud Storage
- Block Storage: EBS, Persistent Disks
- File Storage: EFS, File Share
- Data Backup & Archiving

Module 6: Networking in the Cloud

- VPCs, Subnets, Internet Gateway, NAT
- DNS & Load Balancers
- Security Groups and Network ACLs
- IP Addressing in Cloud

Module 7: Cloud Security & Compliance

- Identity and Access Management (IAM)
- Roles, Policies, and Permissions
- Encryption: In-Transit & At-Rest
- Compliance Standards: GDPR, HIPAA, ISO

🔁 Module 8: Serverless Computing & DevOps in Cloud

- What is Serverless?
- AWS Lambda / Azure Functions
- CI/CD Pipelines using AWS CodePipeline / Azure DevOps
- Infrastructure as Code (Terraform, CloudFormation)

📈 Module 9: Monitoring & Cloud Cost Management

- Monitoring Tools: CloudWatch, Azure Monitor
- Setting Alarms and Metrics
- Budgets and Billing Alerts
- Cost Estimators & ROI Analysis

□ Module 10: Capstone Project

- Deploy a Web Application on Cloud
- Use Compute, Storage, and Networking Services
- Secure and Monitor the App
- Present Cost Analysis and Architecture