Unit 1. Introduction to Cloud Computing

A. What is Cloud Computing?
B. Characteristics & Benefits of Cloud
C. Cloud vs Traditional Computing
D. Cloud Deployment Models (Public, Private, Hybrid, Community)
E. Service Models:
   - IaaS (Infrastructure as a Service)
   - PaaS (Platform as a Service)
   - SaaS (Software as a Service)

Unit 2. Cloud Computing Architecture

A. Cloud Reference Models
B. Components of Cloud Computing
C. Cloud Ecosystem & Business Drivers
D. Scalability, Elasticity, and Fault Tolerance
E. Multi-Tenancy and Resource Pooling

Unit 3. Virtualization Technology

A. What is Virtualization?
B. Hypervisors (Type 1 & Type 2)
C. Virtual Machines vs Containers
D. Virtual Networks & Storage Virtualization
E. Load Balancing & High Availability
F. Install and configure VMs (e.g. VirtualBox, VMware)

Unit 4. Cloud Security & Governance

A. Cloud Security Fundamentals
B. Identity & Access Management (IAM)
C. Encryption in Cloud
D. Privacy, Compliance & Legal Issues
A. Security Best Practices

Unit 5. Cloud Storage & Data Management

A. Cloud Storage Concepts
B. Types of Cloud Storage: Block, File, Object
C. Database Services (SQL/NoSQL in Cloud)
D. Data Replication & Backup Strategies
E. Content Delivery Networks (CDN)

Unit 6. Major Cloud Platforms & Services

A. Amazon Web Services (AWS)
   - EC2 (Virtual Servers)
   - S3 (Cloud Storage)
   - IAM (Identity and Access Management)

B. Microsoft Azure
   - Azure VMs
   - Azure Blob Storage
   - Azure Functions

C. Google Cloud Platform (GCP)
   - Compute Engine
   - Cloud Storage
   - BigQuery

D. Hands-on Labs:

Unit 7. DevOps & Cloud Automation

A. DevOps Fundamentals
B. CI/CD Concepts & Tools
C. Infrastructure as Code (IaC)
D. Automation in Cloud Deployment
E. Monitoring & Logging Tools

Unit 8. Advanced Topics & Trends

A. Serverless Computing & FaaS
B. Kubernetes & Container Orchestration
C. Cloud Cost Optimization
D. Edge & Fog Computing
E. Big Data & Machine Learning in Cloud

Practical:

- Create, configure and deploy virtual machines
- Upload and manage data on AWS S3 / Azure Blob
- Build a simple web app deployment on cloud platforms
- Implement basic security & IAM policies
- Use DevOps tools (GitHub Actions, Jenkins, Terraform)