Welcome to

Cloud Computing Fundamentals

Milestone

COURSE OBJECTIVES

The objective of the **Cloud Computing Fundamentals** course is to equip learners with a strong theoretical understanding of cloud computing concepts, architecture, and service models. The course introduces the fundamental principles behind cloud computing, including its benefits, risks, and deployment models. It emphasizes the structure and delivery of cloud services such as IaaS, PaaS, and SaaS, as well as key topics like virtualization, storage systems, networking in the cloud, and cloud security. The course also provides insight into the leading cloud providers and prepares learners with the foundational knowledge necessary to pursue further cloud certifications or education in cloud-related fields.

CAREER OPPORTUNITIES

This course provides a solid theoretical foundation for careers in cloud computing and IT infrastructure. While it does not involve practical training, it prepares learners to understand core cloud concepts that are essential for entry-level positions such as Cloud Support Trainee, IT Assistant, Cloud Administrator, Cloud Sales Associate, or Cloud Consultant. It also lays the groundwork for students planning to pursue cloud certifications such as AWS Cloud Practitioner or Microsoft Azure Fundamentals, Oracle Cloud Infrastructure Associate which can lead to more technical roles in the future.

LEARNING OBJECTIVES

- Define cloud computing and explain its importance in modern IT environments
- Describe the characteristics and advantages of cloud computing
- Understand the difference between traditional IT infrastructure and cloud-based solutions
- Explain the different service models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)
- Identify and describe the major deployment models: Public, Private, Hybrid, and Community Clouds
- Understand the role of virtualization in enabling cloud services
- Describe cloud storage types and their use cases
- Explain basic concepts in cloud networking and connectivity
- Identify major cloud service providers and their offerings (e.g., AWS, Azure, Google Cloud)
- Understand key concepts in cloud security, privacy, and compliance
- Recognize the importance of cloud monitoring, billing, and cost management
- Discuss emerging trends and the future of cloud computing

TOOLS REQUIRED

For student to complete and participate in this course, the following tool are required:

1. Must have Laptop/Desktop Computer
2. Must have Wi-Fi / Data
3. Ability to use Google Meet
4. Computer Skills

RESOURSES/MATERIALS AND ASSESSESSMENTS

1. Learning materials (Notes or Video provided)
2. Assignments, Assessment and Projects

WEEKLY COURSE OUTLINE

Week 1

Cloud Computing Fundamentals Introduction

- Definition and characteristics of cloud computing
- History and evolution of cloud computing
- Cloud computing vs. traditional computing
- Benefits and challenges of cloud computing
- Cloud deployment models: Public, Private, Hybrid, Community

Week 2

Cloud Service Models

- IaaS (Infrastructure as a Service)
- PaaS (Platform as a Service)
- SaaS (Software as a Service)
- Exploration of cloud service providers: AWS, Azure, Google Cloud

Week 3

Virtualization Technologies

- Introduction to virtualization and its importance
- Hypervisors: Type 1 vs. Type 2
- Virtual Machines vs. Containers
- Role of virtualization in cloud computing

Week 4

Cloud Computing Infrastructure

- Data centers and hardware
- Servers, storage, and networks
- Concepts of elasticity and scalability
- High availability and disaster recovery

Week 5

Cloud Deployment and Management

- Provisioning and de-provisioning
- Cloud orchestration and automation tools
- Cloud resource monitoring
- Service Level Agreements (SLAs)

Week 6

Cloud Storage

- Object storage
- Block storage
- File storage

Week 7

Cloud Networking

- Basics of cloud networking
- Virtual Private Cloud (VPC)
- Load balancing and content delivery networks (CDNs)
- DNS and IP management in the cloud

Week 8

Cloud Security and Compliance

- CIA Triad (Confidentiality, Integrity, Availability)
- Identity and Access Management (IAM)
- Compliance standards (ISO, GDPR, HIPAA, etc.)
- Encryption and secure cloud architecture

Week 9

Cloud Databases

- Introduction to cloud database services: SQL and NoSQL
- Relational Databases (SQL), e.g. MySQL, PostgreSQL, SQL Server, Oracle
- Non-Relational Databases (NoSQL),e.g. MongoDB
- Backup and data lifecycle management

Week 10

Cloud Service Providers

- Introduction to AWS, Microsoft Azure, Oracle and Google Cloud
- Comparison of features and services
- Global infrastructure overview
- Pricing and billing models

Week 11

Serverless Computing and Containers

- Introduction to serverless computing
- Introduction to AWS Lambda and Azure Functions
- Introduction to containers and Docker
- Container orchestration (Kubernetes basics)

Week 12

Cloud Application Development

- Introduction to cloud-native applications
- APIs and microservices
- DevOps in the cloud
- CI/CD pipelines and tools (e.g., GitHub Actions, Jenkins)

Week 13

Cloud Cost Management

- Cloud pricing models
- Cost optimization techniques
- Budget alerts and usage tracking

Week 14

Emerging Trends in Cloud Computing

- Edge Computing
- Artificial Intelligence and Machine Learning in the Cloud
- Internet of Things (IoT)
- Multi-cloud and Hybrid cloud strategies

Week 15

Revision

- Summary and revision of key topics
- Group or individual project presentations
- Q&A and feedback session
- Final exam or assessment

GOOD LUCK!!!