



Certificate Program

Cloud Computing

Subject Name: Foundation of Cloud Computing

Unit – I

- Unit 1: Introduction to Cloud Computing, Characteristics of Cloud Computing
- Unit 2: Cloud Models: Service Models, Cloud Services Examples
- Unit 3: Deployment Models
- Unit 4: IaaS: Amazon EC2, Google Compute Engine, Azure VMs, PaaS: Google App Engine, SaaS: Salesforce

Unit – II

- Unit 5: Cloud-based Services & Applications, Cloud Computing for Healthcare
- Unit 6: Cloud Computing for Energy Systems
- Unit 7: Cloud Computing for Transportation Systems, Manufacturing Industry
- Unit 8: Cloud Computing for Government, Education
- Unit 9: Cloud Computing for Mobile Communication, Scalability & Elasticity

Unit – III

- Unit10: Cloud Concepts & Technologies, Virtualization, and Load Balancing
- Unit 11: Replication & Monitoring
- Unit 12: Software Defined Networking, Network Function Virtualization

Unit – IV

- Unit 13: Virtualization Map Reduce, Identity and Access Management
- Unit 14: Service Level Agreements, Billing



Subject Name: Cloud Services & Platforms

UNIT 1

- Unit 1: Cloud Services & Platforms, Compute Services, Amazon Elastic Compute Cloud
- Unit 2: Google Compute Engine, Windows Azure Virtual Machines
- Unit 3: Storage Services, Amazon Simple Storage Service, Google Cloud Storage, Windows Azure Storage

UNIT 2

- Unit 4: Database Services, Amazon Relational Data Store, Amazon DynamoDB,
- Unit 5: Google Cloud SQL, Google Cloud Datastore , Windows Azure SQL Database, Windows Azure Table Service
- Unit 6: Application Services, Queuing Services
- Unit 7: Email Services, Notification Services, Media Services, Content Delivery Services,
- Unit 8: Amazon CloudFront, Windows Azure Content Delivery Network, Analytics Services,
- Unit 9: Amazon Elastic MapReduce, Google MapReduce Service, Google BigQuery

UNIT 3

- Unit10: Application Runtimes & Frameworks, Windows Azure HDInsight
- Unit 11: Deployment & Management Services, Identity & Access Management Services

UNIT 4

- Unit 12: Open Source Private Cloud Software, Amazon Elastic Beanstalk, Amazon Cloud Formation
- Unit 13: Amazon Identity & Access Management, Windows Azure Active Directory
- Unit 14: Open Source Private Cloud Software, CloudStack, Eucalyptus, OpenStack

Subject Name: Cloud Computing Technologies



UNIT I

- Unit 1: Python for MapReduce, Python Packages of Interest
- Unit 2: JSON, XML, HTTPLib, URLLib, SMTPLib, NumPy, SciKit-learn
- Unit 3: Python web Application Framework - Django, Django Architecture
- Unit 4: Development with Django, Django Case study - Blogging App

UNIT II

- Unit 5: Cloud Application Development in Python
- Unit 6: Design Methodologies for IaaS and PaaS Service model.
- Unit 7: Cloud Application Benchmarking & Tuning, Trace Collection/Generation

UNIT III

- Unit 8: Workload Modeling, Workload Specification, synthetic Workload generation
- Unit 9: Cloud Security, CSA Cloud Security Architecture, Authentication,
- Unit 10: Single Sign On (SSO), Authorization, Identity & Access Management
- Unit 11: Data security, Key Management, Auditing

UNIT IV

- Unit 12: Cloud for industry, Healthcare and Education
- Unit 13: Cloud Computing for Energy Systems, Transportation Systems
- Unit 14: Cloud Computing for Manufacturing and Education

Subject Name: Cloud Applications

UNIT I

- Unit 1: Hadoop Mapreduce job execution, Name Node, Secondary Name Node
- Unit 2: Job Tracker, Task Tracker, Data Node, MapReduce Job Execution
- Unit 3: Workflow Hadoop Schedulers, FIFO
- Unit 4: Fair Scheduler, Capacity Scheduler

UNIT II

- Unit 5: Design considerations for cloud applications



- Unit 6: Cloud Application Design Methodologies
- Unit 7: Service Oriented Architecture, Cloud Component Model , Cloud Services

UNIT III

- Unit 8: Python Basics, Python data types and Data structures
- Unit 9: Control Flow functions, Modules, Packages, File Handling
- Unit 10: Date/time operations , classes, Python for Amazon web and python for Google cloud

UNIT IV

- Unit 11: Amazon EC2, Amazon Autoscaling, Amazon S3, Amazon RDS
- Unit 12: Python for Google Cloud, Google Compute Engine, Google Cloud storage
- Unit 13: Google cloud SQL, Google Bigquery, Python for windows azure
- Unit 14: Azure cloud service, Azure virtual machines and Azure storage