



No:-

Date:

MC470405

CLOUD COMPUTING

L-T-P-Cr 3-0-0-3

Pre-requisites: Basic knowledge of networks and algorithms

Objectives/Overview:

- This course introduces about the cloud environment.
- Building software systems and components that scale to millions of users in modern internet.
- Cloud concepts capabilities across the various cloud service models including IaaS, PaaS, SaaS, and developing cloud based software applications on top of cloud platforms.
- This course also introduces about the data intensive computing and studies about different cloud applications.

Course Outcomes:

At the end of the course, a student should:

S.NO	Course outcomes (Cloud Computing)	
1.	Understands the basic concepts and terminologies in cloud computing, parallel and distributed computing	PO4, PO7, PO12
2.	Demonstrate the knowledge in virtualization and different technology examples of virtualization	PO2, PO4, PO7, PO12
3.	Understands the cloud computing architecture	PO2, PO4, PO5, PO12
4.	Able to design data intensive applications using Map-Reduce programming.	PO1, PO6, PO7, PO12
5.	Able to demonstrate the different cloud applications.	PO3, PO4, PO7, PO12

UNIT I: Introduction**Lectures: 6**

Definition of Cloud Computing: Defining a Cloud, Cloud Types – NIST model, Cloud Cube model, Deployment models, Service models, Cloud Reference model, Characteristics of Cloud Computing, Benefits and advantages of Cloud Computing; Cloud Architecture: A brief introduction on Infrastructure, Platforms, Virtual Appliances, Communication Protocols, Applications, Connecting to the Cloud by Clients; Services and Applications by Type: IaaS, PaaS, SaaS, IDaaS and CaaS.

UNIT II: Virtualization**Lectures: 12**

Introduction, Characteristics of Virtualized Environments, Taxonomy of Virtualization Techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technology Examples, Para Virtualization with XEN Hypervisor, Hardware Assisted Virtualization (KVM /QEMU), Full Virtualization, I/O Virtualization, Memory Virtualization, VM Migration.

UNIT III: Cloud Storage**Lectures: 12**

Cloud storage: key-value stores: Dynamo, semi-structured data storage: Bigtable, application-specific optimizations: Haystack, caching: Memcache

UNIT IV: Data Intensive Computing:**Lectures: 6**

Map-Reduce Programming: What is Data-Intensive Computing? Technologies for Data-Intensive Computing.

UNIT VI: Current Topics in Cloud Computing:**Lectures: 6**

Recent Research developments

Text/Reference Books

1. Distributed and Cloud Computing: From Parallel Processing to the Internet of Things by Kai Hwang, Jack Dongarra, Geoffrey C. Fox
2. Mastering Cloud Computing: by Rajkumar Buyya, Christian Vecchiola and S. Thamarai Selvi, McGraw Hill Education.
3. Cloud Computing: by Rajkumar Buyya, TMH