



No:-

Date:

CS060602: 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 and how to build Aneka clouds.	PO2, PO4, PO7, 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**

Cloud Computing at a Glance, Historical Developments, Building Cloud Computing Environments, Computing Platforms and Technologies.

Principles of Parallel and Distributed Computing

Eras of Computing, Parallel vs. Distributed Computing, Elements of Parallel Computing, Elements of Distributed Computing, Technologies for Distributed Computing

UNIT II: Virtualization**Lectures: 8**

Introduction, Characteristics of Virtualized Environments, Taxonomy of Virtualization Techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technology Examples.

UNIT III: Cloud Computing Architecture**Lectures: 12**

Introduction, Cloud Reference Model, Types of Clouds, Economics of the Cloud, Open Challenges

Cloud Application Platform: Anatomy of the Aneka Container, Building Aneka Clouds, Cloud Programming and Management High-Throughput Computing: Task Programming: Task Computing, Task-based Application Models, Aneka Task-Based Programming.

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

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

UNIT V: Cloud Applications:**Lectures: 6**

Scientific Applications, Healthcare: ECG Analysis in the Cloud, Biology: Protein Structure Prediction, Biology: Gene Expression Data Analysis for Cancer Diagnosis, Business and Consumer Applications, Multiplayer Online Gaming.

UNIT VI: Advanced Topics in Cloud Computing:**Lectures: 4**

Energy Efficiency in Clouds, Market Based Management of Clouds

Text/Reference Books

1. *Mastering Cloud Computing*: by Rajkumar Buyya, Christian Vecchiola and S. Thamarai Selvi, McGraw Hill Education.
2. *Cloud Computing*: by Rajkumar Buyya, TMH