

Regulation 2018								
Department of Information Technology								
Course Code	Course Title	Hours/Weeks			Credits	Maximum Marks		
		L	T	P	C	CA	EA	Total
718ITE08 718CST04	CLOUD COMPUTING	3	0	0	3	50	50	100

OBJECTIVES:

- To understand the concept of cloud and utility computing.
- To understand the various issues in cloud computing.
- To familiarize themselves with the lead players in cloud.
- To appreciate the emergence of cloud as the next generation computing paradigm.
- To use cloud platforms

UNIT-I INTRODUCTION

8

Introduction - Historical Development - Cloud Computing Architecture – The Cloud Reference Model-NIST **Cloud Computing Reference Architecture** – Cloud Characteristics – Cloud Deployment Models: Public, Private, Community, Hybrid Clouds - Cloud Delivery Models: IaaS, PaaS, SaaS – Open Source Private Cloud Software: Eucalyptus, Open Nebula, Open Stack.

UNIT-II VIRTUALIZATION

9

Data Center Technology - Virtualization - Characteristics of Virtualized Environments - Taxonomy of Virtualization Techniques – Virtualization and Cloud Computing – Pros and Cons of Virtualization - Implementation Levels of Virtualization - Tools and Mechanisms: Xen, VMWare, Microsoft Hyper-V.

UNIT-III CLOUD COMPUTING MECHANISM

10

Cloud Infrastructure Mechanism: Cloud Storage-**Storage-as-a-Service** – **Advantages of Cloud Storage** – **Cloud Storage Providers** – S3-Cloud Usage Monitor, Resource Replication – Specialized Cloud Mechanism: Load Balancer, SLA Monitor, Pay-per-use Monitor, Audit Monitor, Failover System, Hypervisor, Resource Cluster, Multi Device Broker, State Management Database – Cloud Management Mechanism: Remote Administration System, Resource Management System, SLA Management System, Billing Management System.

UNIT-IV HADOOP AND MAP REDUCE

9

Apache Hadoop – Hadoop Map Reduce – Hadoop Distributed File System- Hadoop I/O- Developing a Map Reduce Application - Map Reduce Types and Formats - Map Reduce Features– Hadoop Cluster Setup – Administering Hadoop.

UNIT-V SECURITY IN THE CLOUD

9

Basic Terms and Concepts – Threat Agents – Cloud Security Threats – Cloud Security Mechanism: Encryption, Hashing, Digital Signature, Public Key Infrastructure, Identity and Access Management, Single Sign-on, Cloud Based Security Groups, Hardened Virtual Server Images

TOTAL HOURS: 45

COURSE OUTCOMES:

On completion of the course, the students will be able to:

CO1: Analyze the architecture of Cloud computing stack

CO2: Differentiate between full and para virtualization

CO3: Identify the architecture, storage, infrastructure and delivery models of cloud computing

CO4: Design and apply Map Reduce Programming model.

CO5: Understand the necessity and approaches for cloud security.

Mapping of CO's with PO and PSO

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PSO3
C01		3	3	3	3										2
C02	3		2	2	3										
C03		3	2	3	3								1	2	
C04		3	3	3	3								3	3	3
C05	2		2	2	3	3	3						2	2	3

TEXT BOOK:

1. Thomas Erl, Zaigham Mahood, Ricardo Uttini, "Cloud Computing, Concept, Technology and Architecture", Prentice Hall, 2013.

REFERENCE BOOKS:

1. Toby Velte, Anthony Velte, Robert C. Elsenpeter, - Cloud Computing, A Practical Approach Tata McGraw-Hill Edition, 2010.
2. Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi, - Mastering Cloud Computing, Tata McGraw-Hill, 2013.
3. Arshdeep Bahga, Vijay Madisetti, - Cloud Computing: A Hands- On Approach, Universities Press, 2014.
4. Tom White, - Hadoop: The Definitive Guide, O'Reilly Media, 4th Edition, 2015.
5. James E Smith and Ravi Nair, -Virtual Machines, Elsevier, 2005.
6. John Rittinghouse and James Ransome, Cloud Computing, Implementation, Management and Strategy, CRC Press, 2010.
7. Barrie Sosinsky, "Cloud Computing Bible", Wiley, 2010.