

# **Cloud Computing (12B1WCI731)**

## **VIII Sem (CSE / IT/ICT)**

### **Credits-3(3-0)**

#### **Introduction**

Cloud computing is the latest technology in the field of computers and Internet based services. This new technology has helped businesses and individuals to save data efficiently in a cost effective manner. This course will provide an understanding of the concept, standards, products and practical methods pertaining to cloud computing and will be helpful to students and researchers working in the field of cloud computing.

Cloud Computing refers to all the definitions, terminologies, technologies and existing cloud working models. The course also includes cloud architectures, service models. The aspects of algorithms for MapReduce is also included in this course.

#### **Course Objectives (Post-conditions)**

##### **Knowledge objectives:**

The objective of this course is to study cloud computing. This course covers various aspects of cloud computing- Definition, Terminologies, architecture and service models. It also covers products and technologies that are used to manage cloud computing.

By the end of this course, students will be able to:

1. Demonstrate an understanding of cloud computing concepts, standards, and algorithms including MapReduce and graph protocols.
2. Show how to apply cloud computing standards to manage practical networks.
3. Discuss issues and challenges pertaining to management of emerging cloud computing technologies and learn approaches to manage them.
4. Demonstrate in-depth understanding of various aspects of cloud computing and be able to implement cloud services in an effective manner.

##### **Application objectives:**

1. Apply appropriate known cloud services for a given scenario. [Usage]
2. You will be able to analyze the tradeoffs of implementing cloud computing. [Usage]
- 3 You will be able to implement MapReduce and virtualisation. [Usage]

## Expected Student Background (Preconditions)

Computer Networks

### Topics Outline

Sr No	Topic	Hours
1.	Cloud computing – Definition, Terminologies	1
2.	Cloud architecture and service models,	3
3.	utility computing, grid computing	5
4.	cluster computing and Google cluster architecture	2
5.	Data – intensive computing concepts	2
6.	MapReduce and graph algorithms	4
7.	Apache Hadoop,	2
8.	Google’s PageRank algorithm and its implementation with MapReduce	3
9.	virtualization technology,	2
10.	Xen hypervisor	1
11.	server virtualization, desktop virtualization, storage virtualization	4
12.	workloads and software infrastructure for a datacenter,	3
13.	datacenter hardware, energy and power efficiency in a datacenter,	3
14.	Mobile cloud computing	4
15.	disaster recovery in cloud, security and privacy issues with cloud computing,	1
16.	case studies – Google File System (GFS), Google BigTable Data Storage system, Amazon EC2 and S3, Microsoft’s Azure.	2
	<b>Total</b>	<b>42</b>

## References:

1. Cloud Computing Bible by Barry Sosinsky; Wiley Publishing
2. Hadoop – The Definitive Guide, Second Edition by Tom White; O’Reilly and Yahoo Press
3. Data Intensive Text Processing with MapReduce by Jimmy Lin and Chris Dyer; Morgan and Claypool Publishers
4. The Datacenter as a Computer – An Introduction to the Design of Warehouse Scale Machines by Luiz Andre Barroso and Urs Holzle; Morgan and Claypool Publishers

### Other Books

- Cloud Computing: A Practical Approach by Anthony T. Velte, Toby J. Velte and Robert Elsenpeter; Tata McGraw – Hill Edition
- Programming Amazon EC2 by Jurg van Vliet and Flavia Paganelli; O’Reilly Publishers
- Cloud Computing Explained: Implementation Handbook for Enterprises by John Rhoton
- The Cloud at Your Service by Jothy Rosenberg and Arthur Mateos

## **Evaluation Scheme:**

Sr. No	Examination	Marks
1.	T1	15
2.	T2	25
3.	T3	35
4.	Total	75

## **\*Internal Marks Breakdown:**

Assignments 9 marks (3x3)

Quizzes 12 marks (3x4)

Regularity 4 Marks