

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTER OF COMPUTER APPLICATION (COURSE CODE-6)

Year – II (Semester – IV) (W.E.F. 2013-14)

Subject: Cloud Computing

Subject Code: 2640013

Learning Objectives:

- To provide an understanding of the basic concepts of parallel and distributed computing and their role in Cloud Computing.
- To study the concept of Virtualization and relevant technologies available in the market
- To understand the importance of Cloud computing for higher throughput
- To make aware about availability of various Cloud platforms
- To study different application of Cloud and Cloud management techniques

Prerequisites:

- Basic knowledge of Computer Networks and Network protocol suits
- Understanding of process and thread management

Course Contents:

Unit No.	Title	Hours
1	The Vision Of Cloud Computing, Defining A Cloud and Closer Look, Cloud Computing Reference Model, Characteristics and Benefits, Challenges Ahead, Distributed System, Virtualization, Web 2.0, Service-Oriented Computing, Building Cloud Computing Environment. Computing Platform and Technologies – Amazon Web Services (AWS), Google AppEngine, Microsoft Azure, Hadoop, Force.Com and Salesforce.Com, Manjrasoft Aneka Eras of Computing, Parallel vs Distributed Computing, Elements of Parallel Computing, Elements of Distributed Computing, Technologies for Distributed Computing	[10 Hours]
2	Introduction to Virtualization, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technologies Examples—Xen, VMvare, MocroSoft Hyper-V	[08 Hours]

	Introduction of Cloud computing Architecture, Cloud Reference model, Types of Clouds, Economics of the Cloud, Open Challenges	
3	AWS Framework Overview, AWS Cloud Formation, AWS Cloud Management. Introduction to the AWS Flow Framework for Java, Implementing Workflow Applications with the AWS Flow Framework, Workflow and Activity Contracts, Workflow and Activity Type Registration, Activity and Workflow Clients, Workflow Implementation, Activity Implementation	[12 Hours]
4	Running Programs Written with the AWS Flow Framework for Java, Execution Context, Child Workflow Executions, Continuous Workflows, DataConverters, Passing Data to Asynchronous Methods, Testability and Dependency Injection, Error Handling, Daemon Tasks, AWS Flow Framework for Java, Replay Behavior	[12 Hours]
5	Amazon Web Services, Google App Engine, Microsoft Azure, Observations Scientific Applications, Business and Consumer Applications Energy Efficiency in Clouds, market based management of Clouds, federated Clouds/ Inter Cloud, Third Party Cloud Services	[08 Hours]

Reference 1 (Main Reference)

1. Rajkumar Buyya, Christian Vechhiola, S.Thamarai Selvi , “Mastering Cloud Computing“, McGraw Hill Education (India) Private Limited.
2. <http://aws.amazon.com/sdkforjava/>
3. <http://aws.amazon.com/code>
4. <http://docs.aws.amazon.com/amazonswf/latest/awsflowguide/awsflow-developing-workflows.html>
5. <http://docs.aws.amazon.com/amazonswf/latest/developerguide/swf-dg-dev-amzn-swf.html>
6. <http://aws.amazon.com/swf/flow/>

Suggested Additional Reading

1. Cloud Computing: A practical approach by Anthony T. Vetle – Tata McGraw Hill Education Private Limited (2009)
2. Cloud Computing Bible - Barrie Sosinsky – Wiley India Pvt Ltd (2011)
3. Cloud Computing For Dummies-- Judith Hurwitz , Robin Bloor , Marcia Kaufman , Fern Halper - – Wiley India Pvt Ltd
4. Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More (Student Edition) - Kris Jamsa- Published by - Jones & Bartlett Learning
5. <http://googcloudlabs.appspot.com/>

Chapter wise Converge from Main Reference:

Book- 1

Unit 1, Unit 2, Unit 5

Reference 2, 3, 4, 5, 6

Unit 3, Unit 4

Accomplishment of the Student after Completing the Course:

- Understand the role of thread and process in distributed and parallel processing and can aware about the transformation of a stand alone or web based application from distributed and/or parallel to Cloud application
- Understand the principals of Cloud computing
- Ability to understand the concepts of virtualization
- Gain an exposure about Amazon Simple Work Flow Service for Java
- Aware about various services provided by Cloud Computing (SaaS, IaaS, HaaS etc...)
- Gain an exposure about various Cloud platforms available in the IT market