Kadi Sarva Vishwavidyalaya, Gandhinagar
MASTERS OF COMPUTER APPLICATION (MCA)
Year – III (Semester – V) (W.E.F. June 2015)
Subject Name: Cloud Infrastructure & Services (CIS)– MCA-503

Sub Total Credit	Teaching scheme (per week)		Examination scheme				
			MID	CEC	External		Total Marks
	Th	Tutorial	Th	Th	Th.	Pr.	
5	3	2	25	25	50	0	100

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	Contents	Hours
1	Introduction to Cloud Computing: Cloud Computing basics, History to Cloud Computing, Importance of Cloud Computing in the Current Era, Characteristics of Cloud Computing and What Cloud Computing Really is? Move to Cloud Computing: Pros and Cons of Cloud Computing, Nature of Cloud, Technologies in Cloud Computing, Migrating into the Cloud Types of Cloud: Public and Private Cloud, Cloud Infrastructure, Cloud Application Architecture Working of Cloud Computing: Trends in Computing, Cloud Service Models, Cloud Deployment Models, Pros and Cons of Cloud Computing, Cloud Computing and Services Cloud Architecture: Cloud Computing Logical Architecture, Developing Holistic, Cloud Computing Reference Model, Cloud System Architecture, Cloud Deployment Model Cloud Services: Cloud Types and Services, Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service(IaaS), Other Cloud Services	12 (20%)
2	Foundations: Definition of Virtualization, Adopting Virtualization, Virtualization Architecture and software, Virtual Clustering, Virtualization Applications, Pitfalls of Virtualization Grid, Cloud and Virtualization: Virtualization in Grid, Virtualization in Cloud, Virtualization in Cloud Security Virtualization and Cloud Computing: Anatomy of Cloud Infrastructure, Virtual Infrastructures, CPU Virtualization, Network and Storage Virtualization	8 (20%)
3	Data Storage: Introduction to Enterprise Data Storage, Data Storage Management, File Systems ,Cloud Data Stores, Using Grids for Data Store Cloud Storage: What is Cloud Storage?, Overview of Cloud Storage, Data Management for Cloud Storage, Provisioning Cloud Storage, Data-intensive Technologies for Cloud Computing	12 (20%)

	Cloud Storage from LANs to WANs: Introduction, Cloud Characteristic, Distributed Data Storage, Applications Utilizing Cloud Storage Risks in Cloud Computing: Introduction, Risk Management, Cloud Impact, Enterprise Wide Risk Management, Types of Risks in Cloud Data Security in Cloud: Introduction, Current State, Homo Sapiens and Digital Information, Cloud, Digital Persona and Data Security, Content Level Security Cloud Security Services: Objectives, Confidentiality , Integrity and Availability, Security Authorization Challenges in the Cloud, Secure Cloud Software Requirements, Secure Cloud Software Testing	
4	Tools and Technologies for Cloud: Parallel Computing, Eras of Computing, High Performance Parallel Computing with cloud and cloud Technologies, Cloud Computing Application Platform, Cloud Computing Platform, Tools for Building Cloud Microsoft Cloud Services: Introduction, Windows Azure Platform Google Cloud Applications: Google Applications Utilizing Cloud, Google App Engine Amazon Cloud Services: Understanding Amazon Web Components and Services, Elastic Compute Cloud (EC2), Amazon Storage System, Amazon Database Services Cloud Applications: Cloud – Based Solutions, Cloud Computing Services, Cloud Software for Private Banking, Cloud Software for Asset Management, Cloud Software for Fund Management	8 (20%)
5	Google App Engine(GAE): Understand the development of scalable web application on Google's cloud, Build and deploy simple web applications to Google's cloud, Develop simple application using Google App Engine (GAE) and its services	8 (20%)

Reference 1 (Main Reference)

"Cloud Computing A practical approach for learning and implementation" by A.Srinivasan and J.Suresh Pearson Publications (Unit # : 1,2,3,4)

Unit 5:

http://appengine.google.com
http://cloud.google.com/appengine/docs/java/tools/uploadinganapp
https://cloud.google.com/appengine/docs/java/tools/eclipse
https://cloud.google.com/appengine/docs/java/gettingstarted
https://cloud.google.com/appengine/docs/java/gettingstarted/setup
https://cloud.google.com/appengine/docs/java/gettingstarted/creating
https://cloud.google.com/appengine/docs/java/gettingstarted/ui_and_code

Suggested Additional Reading

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

Chapter wise Converge from Main Reference:

Unit #	Chapters
Unit 1	1,2,3,4,6,16
Unit 2	8,9,10
Unit 3	11,12,13,18,19,20
Unit 4	24,29,30,31,32

Accomplishment of the Student after Completing the Course: (Cloud Infrastructure & Services)

- 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 Google App Engine 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