

Kadi Sarva Vishwavidyalaya, Gandhinagar

MCA Semester V

MCA 503: Cloud Infrastructure & Services

Rationale: The Objective of this subject is

- 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

Prerequisite: Basic knowledge of Computer Networks, performance of Applications and their throughput.

Learning Outcomes:

Students will be able to understand the concept of Cloud and its working.

Teaching and Evaluation Scheme: Students are evaluated on the basis of continuous evaluation system both in theory and practical classes based on various parameters like term work, class participation, practical and theory assignments, presentation, class test, Regular Attendance, etc.

Sub Total Credit	Teaching scheme		Examination scheme				Total Marks
	(per week)		MID	CEC	External		
	Th	Pr	Th	Th	Th.	Pr.	
4	4	0	25	25	50	0	100

Course Contents:

UNIT 1: Introduction to Cloud Computing [20%]

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

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, 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

UNIT 2: Foundations**[20%]**

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

UNIT 3: Data Storage & Security**[20%]**

Cloud Storage: What is Cloud Storage?, Overview of Cloud Storage, Data Management for Cloud Storage, Provisioning Cloud Storage, Data-intensive Technologies for Cloud Computing

Introduction to Enterprise Data Storage, Data Storage Management, File Systems, Cloud Data stores

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, Digital Persona and Data Security, Content Level Security

Cloud Security Services: Objectives, Confidentiality, Integrity and Availability, Security authorization challenges in the Cloud

UNIT 4: Cloud Applications**[20%]**

Parallel Computing, Eras of Computing, High Performance Parallel Computing with cloud and cloud Technologies, Cloud Computing Platforms, 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

UNIT 5: Case studies & Future Cloud**[20%]**

Case Studies: Dell, Wipro, Razorfish and Japan Post

Future Trends: Emerging Future trends in Cloud Computing, Next Generation Networking (NGN)

Mobile Cloud Architecture & its Key requirements, Jungle Computing

Text Books:

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

Chapter & Topics –

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
Unit 5	33, 34, 38, 39 (39.5, 39.6.2, 39.6.4, 39.6.5)

Reference Book:

1. Cloud Computing: A practical approach by Anthony T. Vetle – Tata McGraw Hill Education Private Limited (2009)
2. OpenStack Cloud Security by Fabio Alessandro Locati, Packt Publishing
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.