

Branch Name:	MCA
Program Code:	CS201
Course Name:	Cloud Computing Fundamentals
Course Code:	4CS2010207T
Pre-requisite Course:	• Fundamentals of Computer Networks • Operating Systems • Basics of Web Technologies • Introduction to Distributed Computing

Course Objectives:

1. To provide fundamental knowledge of Cloud Computing architecture, models, and technologies.
2. To understand cloud services and deployment models.
3. To explore virtualization and its role in cloud infrastructure.
4. To introduce cloud security issues and solutions.
5. To identify major cloud service providers and their offerings.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	-	4	60	40	-	-	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Introduction to Cloud Computing Definition, Characteristics, Benefits, Evolution, Grid vs. Cloud, Cluster vs. Cloud, Types of Cloud (Public, Private, Hybrid, Community), Cloud Service Models (IaaS, PaaS, SaaS)	12	25
2	Cloud Architecture and Virtualization Cloud Reference Architecture, Service-Oriented Architecture (SOA), Virtualization Concepts, Types of Virtualizations (Server, Storage, Network), Hypervisors, Virtual Machines, Role of Virtualization in Cloud	11	25
3	Cloud Deployment & Service Management Deployment Models, Cloud Lifecycle, Cloud Standards (IEEE, NIST), SLAs, Cloud Interoperability, Cloud Monitoring, Resource Allocation and Load Balancing	12	25
4	Cloud Security and Industry Practices Security Challenges in Cloud, Data Protection and Privacy, Security-as-a-Service, Cloud Compliance, Case Study of AWS, Microsoft Azure, Google Cloud Platform, Trends in Cloud Computing (Serverless, Edge, Multi-cloud)	11	25

Text Books:

1. Rajkumar Buyya, James Broberg, Andrzej Goscinski, "Cloud Computing: Principles and Paradigms", Wiley India.
2. Arshdeep Bahga, Vijay Madisetti, "Cloud Computing: A Hands-On Approach", Universities Press.

Reference Books:

1. Gautam Shroff, "Enterprise Cloud Computing: Technology, Architecture, Applications", Cambridge University Press.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing: A Practical Approach", McGraw Hill.
3. Kris Jamsa, "Cloud Computing: SaaS, PaaS, IaaS, Virtualization and more", Jones & Bartlett.

List of Open-Source Software/learning website:

- <https://www.cybrary.it/>
- <https://aws.amazon.com/training/>
- <https://azure.microsoft.com/en-us/training/>
- <https://cloud.google.com/training>
- <https://nptel.ac.in/courses/106/105/106105167/>
- <https://www.edx.org/course/cloud-computing-basics>
- <https://www.coursera.org/specializations/cloud-computing>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the fundamental concepts, characteristics, and service models of cloud computing.	Understand
CLO2	Describe the cloud architecture and role of virtualization in cloud infrastructure.	Apply
CLO3	Analyse cloud deployment models and lifecycle management of cloud services.	Analyze
CLO4	Evaluate security threats and mechanisms in cloud environments.	Evaluate
CLO5	Examine cloud service providers and their offerings.	Apply
CLO6	Explore trends and emerging technologies in the cloud domain.	Analyze

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes(POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	L	L	-	-	L	-	-	-	L			M	L
CLO2	H	M	M	-	-	L	-	-	-	L			H	L
CLO3	H	M	H	-	-	L	-	-	-	L			H	M
CLO4	H	H	H	-	-	M	-	-	-	L			H	H
CLO5	H	M	M	-	-	L	-	-	-	L			M	H
CLO6	M	L	L	-	-	L	-	-	-	M			L	H

H:High, M:Medium, L:Low