

Program	Bachelor of Technology (B.Tech.)	Semester - 4
Type of Course	Discipline Specific Elective Courses	
Prerequisite	Basic Programming skills 03070501-T - COMPUTER NETWORK	
Rationale	1. To learn how to use Cloud Services 2. To implement Virtualization, Task scheduling algorithm and to build private network. 3. Apply Map-reduce concept to applications	
Effective From A.Y.	2024-25	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				T	T	P	P	
3	0	2	4	70	30	50	-	100

SEE - Semester End Examination, T - Internal Theory, P - Internal Practical

Course Content		T - Teaching Hours W - Weightage		
Sr.	Topics	T	W	
1	Introduction to Cloud Computing Overview, Roots of Cloud Computing, Layers and Types of Cloud, Desired Features of a Cloud, Benefits and Disadvantages of Cloud Computing. Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks		10	15
2	Cloud Architecture ,Services and Applications Exploring the Cloud Computing Stack, Connecting to the Cloud, Infrastructure as a Service, Platform as a Service, SaaS Vs. PaaS, Using PaaS Application Frameworks, Software as a Service. Cloud Deployment Models: Public vs Private Cloud, Cloud Solutions, Cloud ecosystem, Service management, Computing on demand, Identity as a Service, Compliance as a Service.		15	25
3	Abstraction and Virtualization Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hyper visors, Understanding Machine Imaging, Porting Applications Virtual Machines Provisioning and Manageability Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Context. Virtualization of CPU, Memory , I/O Devices, Virtual Clusters and Resource management, Virtualization for Data Center Automation		15	25
4	Cloud Infrastructure and Cloud Resource Management Architectural Design of Compute and Storage Clouds, Layered Cloud Architecture, Development, Design Challenges, Inter Cloud Resource Management, Resource provisioning and Platform Deployment, Global Exchange of Cloud Resources, Administrating the Clouds, Cloud Management Products, Emerging Cloud Management Standards.		10	15
5	Cloud Security Security Overview , Cloud security challenges, Cloud Security Challenges and Risks Software-as-a-Service Security. Cloud computing security architecture: Architectural Considerations, General Issues Securing the Cloud, Securing Data, Application Security, Virtual Machine Security Identity and Presence Identity Management and Access Control. Autonomic Security Establishing Trusted Cloud computing, Secure Execution Environments and Communications, Identity Management and Access control Identity management, Access control, Autonomic Security Storage Area Networks, Disaster Recovery in Clouds		10	20
				Total 60 100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Create
Weightage	20	20	20	10	30

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes

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

CO1	Analyze the different layers Cloud computing using different architectures with it's advantages and disadvantages.
CO2	Explore the Cloud Architecture along with IaaS, SaaS, PaaS using Application Frameworks.
CO3	Use the concept of Abstraction and Virtualization of CPU, Memory , I/O Devices, Virtual Clusters and Resource management
CO4	Understand the Cloud Infrastructure and Resource Management in Cloud Computing
CO5	Learn about Cloud Security to overcome different types of Challenges and Risks.

Reference Books

1.	Cloud Computing Bible By Barrie Sosinsky Wiley India
2.	Cloud Computing: Principles and Paradigms By Rajkumar Buyya, James Broberg, Andrzej M. Goscinski Wiley India
3.	Cloud Computing: Principles, Systems and Applications (TextBook) By Nikos Antonopoulos, Lee Gillam Springer 2012

List of Practical

1.	Cloud SPI models
2.	Case studies on a. Infrastructure as a Service (IaaS),Virtualization, Platform as a service b. (PaaS), Cloud platform management, c. Software as a Service
3.	Data security and Storage, Data privacy, Access management, Cloud computing standards and Interoperability
4.	Case Study: Amazon Web Services