

Course Code	Course Title	L	T	P	C
BITE412L	Cloud Computing	3	0	0	3
Pre-requisite	NIL	Syllabus version			
		1.0			
Course Objectives:					
<ol style="list-style-type: none"> 1. To expose the students to frontier areas of cloud computing and virtualization techniques 2. To provide comprehensive and in-depth knowledge of cloud technologies, architecture and applications 3. To understand the security aspects of cloud computing and build a trusted cloud computing system 					
Course Outcomes:					
<ol style="list-style-type: none"> 1. Apply the virtualization techniques for cloud computing services 2. Compare, contrast, and evaluate the fundamental trade-offs in planning the multi-cloud system 3. Propose solutions to complex problems using Cloud HPC systems 4. Recommend cloud security methods, the risks involved their impact and provide a secure cloud environment 5. Analyze and solve industry-related problems using modern tools 					
Module:1 Introduction to Cloud Computing					
6 hours					
Definition- Characteristics- Cloud Models- Cloud Computing Concepts & Technologies-Cloud Computing Services & Platforms - Generic Case Studies					
Module:2 Virtualization					
6 hours					
Implementation Levels of Virtualization – Tools and Mechanisms- Virtualization of CPU, Memory and I/O Devices- Virtual Clusters and Resource Management – Virtualization for Data-Center Automation.					
Module:3 Cloud Platform Architecture over Virtualized Data Centers					
6 hours					
Cloud Service Models- Data-center Design and Interconnection Networks- Architectural Design of Compute and Storage Clouds-Public Cloud Platforms- Inter-cloud resource management.					
Module:4 Cloud Application Development					
7 hours					
Design Considerations for Cloud Applications-Cloud Application Design Methodologies-Reference Architectures for Cloud Applications-Python Web Application Framework – Django-Designing a RESTful Web API- Serverless computing.					
Module:5 Cloud Programming and Software Environments					
6 hours					
Parallel and Distributed Programming Paradigms – Programming Support the Google App Engine- Programming on Amazon AWS and Microsoft Azure-Emerging cloud software environments.					
Module:6 Cloud Storage					
6 hours					

Amazon Simple Storage Service (S3)- Buckets- Objects- Storage Classes - Cross-Region Replication - Elastic File System (EFS)- Elastic Block Store (EBS) - Storage Gateway.			
Module:7	Cloud Security		6 hours
CSA Cloud Security Architecture - Authentication – Authorization- Identity & Access Management - Data Security- Key Management- Auditing - Key Management Service (KMS)- Cloud HSM- Directory Service.			
Module:8	Contemporary Issues		2 hours
Total Lecture hours:			45 hours
Text Books			
1.	Arshdeep Bahga & Vijay Madiseti, "Cloud Computing Solution Architecture – A Hands-On Approach", VPT Publisher; 1 st edition, 2019.		
2.	Kai Hwang, Geoffrey C Fox, Jack G Dongarra, Distributed and Cloud Computing, From Parallel Processing to the Internet of Things, Morgan Kaufmann Publishers, 2012.		
Reference Books			
1.	Rajkumar Buyya, Chirstian Vecchiola, S.Thamarai Selvi, "Mastering Cloud Computing", Tata McGraw Hill, India , 2013.		
2.	Dan C. Marinescu, "Cloud Computing Theory and Practice" Second Edition, Elsevier India, 2019.		
Mode of Evaluation: Continuous Assessment Tests, Assignment, Quiz, Final Assessment Test			
Recommended by Board of Studies		12-10-2022	
Approved by Academic Council		No. 68	Date 19-12-2022