



**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Syllabus for Bachelor of Vocation (B.Voc.), 6<sup>th</sup> Semester**  
**Branch: Information Technology**  
**Subject Name: Cloud Computing**  
**Subject Code: 1160504**

**Type of Course:** Core.

**Prerequisites:** Web Development & Core Java Programming.

**Rationale:** This course aims students to understand the hardware, software concepts and architecture of cloud computing. Students realize the importance of Cloud Virtualization, Abstractions and Enabling Technologies.

**Teaching and Examination Scheme:**

Teaching Scheme			Credit	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA(M)	ESE(V)	PA(I)		
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE-End Semester Examination; PA- Progressive Assessment

**Course Details:**

Sr. No.	Topics and Sub Topics	Hrs.	Weightage (%)
1	<b>Unit – I Introduction to Cloud Computing</b> Introduction, Characteristics of cloud computing & its challenges, three services Model of cloud computing, Distributed System, History and evolution of cloud computing, Types of cloud computing Private cloud – Private cloud, public cloud, Community Cloud, Hybrid Cloud, Cloud Computing Architecture, Obstacles of Cloud technology.	8	20%
2	<b>Unit – II Cloud Computing Companies and Migration to Cloud</b> Introduction, Web-based Business process, delivering business Processes from the Cloud, Broad Approaches to migrating to the cloud, the seven-step model of migration to the cloud, efficient step for migrating to the cloud – case studies, Migrating Failure and Continuously Measures, risk in cloud Computing, Risk Assessment	8	10%
3	<b>Unit – III Cloud Cost Management and Selection of Cloud Provider</b> Introduction, Evaluating the business need, Consideration for selection a Cloud Solution, Business Consideration, Data Safety and Security, Interoperability and integration, Service level Consideration, Standard and Best Practices, Understating the best Practices.	8	15%
4	<b>Unit– IV System Modeling &amp; Computer Clusters for Scalable Parallel Computing</b> Scalable Computing over the internet, Computing Paradigm Distinction, Degree of parallelism, Utility Computing, Cyber Physical system, System model for distributed and cloud	10	25%



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	computing, Computing cluster, Cluster Architecture, Single System Image Cluster, Hardware Software and Middleware Support Cluster, Grid Computing, Peer to peer Network- P2P, Peer-to-peer Network-Overlay Network, Energy efficiency in distributed computing, Computer clusters for scalable Parallel Computing, Compute clusters, Basic Cluster Architecture, Recourse Sharing on cluster, Design Principles of computer clusters		
<b>5</b>	<b>Unit– V Virtualization: Virtual Machines and virtualization of clusters and Data Centers</b> Level of Virtualization Implementation, Instruction set Architecture level, Hardware Abstraction Level, Operating System Level, Library Support Level, User-Application Level, VMM Design Represents and Providers, CPU Virtualization, Memory Virtualization, I/O Virtualization, Virtual Cluster, Virtualization for data-center automation, Server Conciliations in data center, Virtual Storage Management, Cloud OS for virtualization data center, Virtual Machine Poisoning and Migration Services, Virtual Machine Lifecycle, Live migration and High Availabilities, Distributed Management of virtual infrastructures,	<b>8</b>	<b>30%</b>
<b>Total</b>		<b>42</b>	<b>100</b>

**Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>				
R Level	U Level	A Level	N Level	E Level
20	20	10	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate  
 C: Create and above Levels (Revised Bloom’s Taxonomy)

**Reference Books:**

1. Cloud Computing : Scientific International Publishing House
2. Cloud Computing: Concepts, Technology & Architecture
3. Cloud Computing for Dummies
4. Cloud Computing Black Book
5. Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More
6. Cloud Computing: Master the Concepts, Architecture and Applications with Real-world examples and Case studies

**List of Software/Learning Websites**

1. [https://www.tutorialspoint.com/cloud\\_computing/index.htm](https://www.tutorialspoint.com/cloud_computing/index.htm)
2. <https://www.geeksforgeeks.org/cloud-computing/>
3. [https://www.w3schools.com/aws/aws\\_cloudessentials\\_cloudcomputing.php](https://www.w3schools.com/aws/aws_cloudessentials_cloudcomputing.php)
4. <https://www.w3schools.in/cloud-computing>



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**Course Outcomes:**

<b>Sr. No.</b>	<b>CO Statement</b>	<b>%Weightage</b>
CO-1	Introduction to Cloud Computing	10
CO-2	Cloud Computing Companies and Migration to Cloud	15
CO-3	Cloud Cost Management and Selection of Cloud Provider	15
CO-4	System Modeling & Computer Clusters for Scalable Parallel Computing	30
CO-5	Virtualization: Virtual Machines and virtualization of clusters and Data Centers	30