Semester VI

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-601	Cloud Computing	PCC	4	3	1	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Explain cloud computing models and basic security concepts.
CO2	Examine cloud infrastructure mechanisms to manage resources and enhance performance.
CO3	Analyze advanced cloud architectures for high availability and fault tolerance.
CO4	Evaluate cloud delivery models and metrics for cost-effective, reliable services.
CO5	Formulate cloud strategies using industry standards and real-world case studies.

Detailed Syllabus
Section A
UNIT 1: Fundamental Cloud Computing: Understanding Cloud Computing, Fundamental Concepts and Models: Roles, Characteristics, Cloud Delivery & Deployment Models, Cloud-Enabling Technology : Broadband Networks and Internet Architecture, Data Center & Virtualization Technology, Web, Multitenant and Service Technology, Fundamental Cloud Security : Basic Terms and Concepts, Threat Agents, Cloud Security Threats. Risk Management.
(8 hrs.)

UNIT 2: Cloud Computing Mechanisms: Cloud Infrastructure Mechanisms: Virtual Server, Cloud Storage Device, Usage Monitor, Resource Replication, Specialized Cloud Mechanisms: Load Balancer, SLA Monitor, Hypervisor, Multi-Device Broker, Cloud Management Mechanisms, Cloud Security Mechanisms: Encryption, Hashing, Digital Signature, Public Key Infrastructure (PKI), Identity and Access Management (IAM), Single Sign-On (SSO).
(10 hrs.)

UNIT 3: Cloud Computing Architecture: Fundamental Cloud Architectures: Workload Distribution, Resource Pooling, Service Load Balancing and Dynamic Scalability Architecture, Advanced Cloud Architectures: Hypervisor Clustering, Load Balanced Virtual Server Instances, Zero Downtime and Dynamic Failure Detection and Recovery Architecture.
(10 hrs.)

UNIT 4: Working with Clouds: Cloud Delivery Models: Cloud Provider and Consumer perspective, Building and Working with IaaS, PaaS and SaaS service environments, Business Cost Metrics, Cloud Usage Cost Metrics, Service Quality Metrics: Service Availability, Service Reliability, Service Performance, Service Scalability and Service Resiliency Metrics.
(10 hrs.)

UNIT 5: Advanced Cloud Practices and Case Studies: Industry Standards Organizations, Data Center Facilities, Cloud-Adapted Risk Management Framework, Case Studies.
(6 hrs.)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Cloud Computing: Concepts, Technology & Architecture	Thomas Erl, Zaigham Mahmood, and Ricardo Puttini	PHI	1st (2013)