GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology		Branch/Spec.	Computer Engineering/Information Technology	
Semester	VI		Version	2.0.0.0	
Effective from Academic Year	2020-21		Effective for the batch Admitted in		July 2018
Subject code	2CEIT603	Subject Name	Cloud Computing		

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	-	4	Theory	40	60	100
Hours	3	0	2	-	5	Practical	30	20	50

Pre-requisites:

Computer Network

Objectives of the course:

1. Understand the basics of hardware, software concepts and architecture of cloud computing.
2. Acquire knowledge on the service models with reference to Cloud Computing.
3. Gain knowledge of Virtualization Technologies.
4. Design and deploy Cloud Infrastructure for various applications.
5. Understand the concept of cloud security and how to manage and maintain it.

Theory syllabus

Unit	Content	Hrs
1	**Introduction:** Introduction to Cloud Computing – Definition of Cloud – Evolution of Cloud Computing – Underlying Principles of Parallel and Distributed Computing, Layers and Types of Clouds, Cloud Infrastructure Management, Challenges and Applications. Cloud Services: Introduction to Cloud Services IaaS, PaaS and SaaS	07
2	**Cloud enabling Technologies:** Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish Subscribe Model – Basics of Virtualization – Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization – System VM, Process VM, VM provisioning process, VM Migration techniques, Virtual Machine monitor – Virtual machine properties - Interpretation and binary translation, VM - Hypervisors – Xen, KVM , VMWare, Virtual Box, Hyper-V	07
3	**Cloud Architecture, Services and Storage**: Layered Cloud Architecture Design– Public, Private and Hybrid Clouds – laaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3, Cloud balancing architecture	08
4	**MapReduce Programming models and File Systems:** Introduction to MapReduce: MapReduce Programming Model, MapReduce Impacts, Google File System – Hadoop File System - Hadoop Framework	06
5	**Management and Monitoring:** Service quality metrics and SLAs (service level agreements), SLA Guidelines, cloud usage monitor, SLA Management, Introduction to Monitoring, Needs for monitoring, Cloud monitoring tools, Resource Allocation and Pricing in Cloud	04
6	**Security and Privacy:** Cloud security mechanism, cloud security threats, Infrastructure Security, Data Security and Storage, Identity and Access Management (IAM), Case study example, Privacy	05
7	**Cloud Middleware:** OpenStack, OpenNebula, Windows Azure, CloudSim, EyeOs, Aneka, Google App Engine, Amazon EC2	08

Practical content	
Experiments/Practicals/Simulations would be carried out based on syllabus	
Text Books	
1	Rajkumar Buyya, James Broberg, Andrzej M Goscinski, Cloud Computing: Principles and Paradigms, Wiley publication
Reference Books	
1	Toby Velte, Anthony Velte, Cloud Computing: A Practical Approach, McGraw-Hill Osborne Media.
2	Thomas Erl, Z Mahmood and Ricardo Puttini, Cloud computing concepts, technology and architecture, Prentice Hall
ICT/MOOCs Reference	
1	http://nptel.ac.in/courses/106105167/
2	http://nptel.ac.in/courses/106106129/28
3	https://www.coursera.org/learn/cloud-computing
Course Outcomes:	

After successful completion of this course, student will be able to

1. Understand the hardware, software concepts and architecture of cloud computing.
2. Understand the Service Model with reference to Cloud Computing.
3. Appreciate the role of Virtualization Technologies.
4. Design and deploy Cloud Infrastructure.
5. Understand cloud security issues and solutions.