Parul® University

Course: MCA (A.Y.-II) 2020   **Semester:** 3

Prerequisite: Fundamental knowledge of Networking and Computing, Basic Knowledge of Web Services

Course Objective: The key objectives of this course are to provide an understanding of the basic concepts of parallel and distributed computing and their role in cloud computing, to study the concept of virtualization and relevant technologies available in the market, to understand the importance of cloud computing for higher throughput, to make aware about availability of various cloud platforms, to study different application of cloud and cloud management techniques.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	1	2	-	5	20	20	20	60	30	150

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

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Networking in the Cloud** Introduction to Networking in the Cloud, Defining a Virtual Private Cloud, Public and Private IP Address Basics, Routes and Firewall Rules in the Cloud, Multiple VPC Networks, Building Hybrid Clouds, Different Options of Load Balancing.	15	8
2	**Working with Google App Engine** Google App Engine (GAE), Development of scalable web application on Google cloud, Build and deploy simple web applications to Google cloud, Develop simple application using Google App Engine (GAE) and its services, Exploring PaaS with App Engine, Event Driven Programs with Cloud Functions, Containerizing and Orchestrating Apps with GKE.	20	10
3	**Microsoft Cloud Services** Introduction, Understanding Microsoft Azure platform, Core Azure Services, Management tools on Azure, Security features of Azure, Introduction to Azure SQL, Overview of Hosting and provisioning with Azure	20	10
4	**Amazon Cloud Services** Introduction to Amazon Web Services(AWS), Understanding Amazon Web Components(AWC), The AWS console, AWS compute, Elastic Compute Cloud (EC2), Launching EC2 instance, Amazon storage system, Amazon database services, Running programs written with the AWS flow framework for Java.	20	10
5	**Cloud ML and AI** Introduction to Machine Learning(ML), Building ML and AI models on Cloud, ML and GCP, Cloud AutoML, Google's pre-trained ML APIs.	15	6
6	**Case Study of Cloud Computing Platforms and Services**	10	4

Reference Books

1.	**Cloud Computing - A practical approach for learning and implementation** By A.Srinivasan and J.Suresh | Pearson Publications
2.	**Cloud Computing: A practical approach** By Anthony T. Vetle | TMH
3.	**Cloud Computing For Dummies** By Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper | Wiley India Pvt Ltd
4.	**Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More** By Kris Jamsa | Jones & Bartlett Learning
5.	**Cloud Computing Bible** By Barrie Sosinsky | Wiley India Pvt Ltd

Course Outcome

After Learning the Course the students shall be able to:

• define cloud computing and its applications.
• describe role of virtualization in establishing cloud.
• understand principles and service models of cloud computing.
• familiarize with various cloud computing platforms.
• conceptualize cloud storage management and data security.
• identify feasible cloud platforms for solutions to be provided.
• deploy services and resources on cloud platforms.

List of Practical

1.	**Virtual Cloud Lab: Sign-Up or Set-Up Virtual Cloud Lab and provision at least one resource on the same.**
2.	**Create a Cloud-based Virtual Machine and deploy. Use free/open Cloud Platform of your choice.**
3.	**Create a Cloud Storage Bucket on Google Cloud and upload/host a static website using Cloud Storage Bucket.**
4.	**Connect with Google Cloud DB service and Run SQL queries and analyze DB.**
5.	**Create your Amazon Bucket for Cloud Storage.**
6.	**Create your Amazon EC2 Instances for Windows and Linux.**
7.	**Build a Container Application and Upload on a cloud platform of your choice.**
8.	**Deploy and Monitor Web App using Azure App service.**
9.	**Sign Up and Explore Azure ML Studio. Create and Run at least one Azure ML Pipeline interface.**
10.	**Visualize your data using Amazon QuickSight. Connect Amazon Data Source with your test Dataset and generate different visualizations.**
11.	**Develop, Build and Deploy a container Application On Google Compute Engine.**
12.	**Explore GCP, AWS, and Azure. Perform Case Study on any one of these Cloud Platforms and prepare detailed report on your Case Study.**

Miscellaneous

Useful Links

1. https://azure.microsoft.com/en-in/get-started/
2. https://docs.aws.amazon.com/ec2/index.html
3. https://cloud.google.com/appengine/docs