CLOUD INFRASTRUCTURE MANAGEMENT

(Program Elective – VI)

Course Code	19IT4801B	Year	IV	Semester	II
Course Category	PE	Branch	IT	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	DCCN, OS
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

	Course Outcomes	Blooms Taxonomy Level
Upon successful completion of the course, the student will be able to		
CO1	Understand the concept of virtualization and how this has enabled the development of Cloud Computing, scaling, cloud security and disaster management	**L2**
CO2	Know the fundamentals of cloud, cloud Architectures and types of services in cloud	**L2**
CO3	Demonstrate different Applications in cloud	**L3**
CO4	Make Use Of some important cloud computing driven commercial systems	**L3**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3		2	2								2	2
CO2	3	3		2	2								2	2
CO3	3	3		2	2								2	2
CO4	3	3		2	2								2	2

Syllabus		
Unit No	**Contents**	**Mapped CO**
I	**Introduction to Cloud**: Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, A Closer Look, Cloud Computing Reference Model. Characteristics and Benefits, Challenges Ahead, Historical Developments. Virtualization: Introduction, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud computing, Pros and Cons of Virtualization, Technology Examples- VMware and Microsoft Hyper-V. Before the Move into the Cloud: Know Your Software Licenses, The Shift to a Cloud Cost Model, Service Levels for Cloud Applications.	**CO1**
II	**Cloud Computing Architecture**: Introduction, Cloud Reference Model, Architecture, Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service, Types of Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds, Economics of the Cloud, Open Challenges, Cloud Interoperability and Standards, Scalability and Fault Tolerance. Ready for the Cloud: Web Application Design, Machine Image Design, Privacy Design, Database Management, Data Security, Network Security, Host Security, Compromise Response	**CO1, CO2**
III	**Defining the Clouds for Enterprise**: Storage as a service, Database as a service, Process as a service, Information as a service, Integration as a service and Testing as a service. Scaling a cloud infrastructure - Capacity Planning, Cloud Scale. Disaster Recovery: Disaster Recovery Planning, Disasters in the Cloud, Disaster Management.	**CO1, CO3**
IV	**Aneka**: Cloud Application Platform Framework Overview, Anatomy of the Aneka Container, From the Ground Up: Platform Abstraction Layer, Fabric Services, Foundation Services, Application Services, Building Aneka Clouds, Infrastructure Organization, Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode, Hybrid Cloud Deployment Mode, Cloud Programming and Management, Aneka SDK, Management Tools.	**CO1, CO4**
V	**Cloud Applications**: Scientific Applications – Health care, Geoscience and Biology. Business and Consumer Applications- CRM and ERP, Social Networking, Media Applications and Multiplayer Online Gaming. Cloud Platforms in Industry: Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life-Cycle, cost model. Microsoft Azure- Azure Core Concepts, SQL Azure	**CO1, CO4**

Learning Resources
Text books
1. Mastering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi from TMH 2013. 2. George Reese Cloud Application Architectures, First Edition, O"Reilly Media 2009.
References
1. Cloud Computing and SOA Convergence in Your Enterprise A Step-by-Step Guide by David S. Linthicum from Pearson 2010. 2. Cloud Computing 2nd Edition by Dr. Kumar Saurabh from Wiley India 2012. 3. Cloud Computing – web based Applications that change the way you work and collaboration Online – Micheal Miller.Pearson Education.
e-Resources and other Digital Material
1. https://www.redhat.com/en/topics/cloud-computing/what-is-cloud-infrastructure 2. https://www.youtube.com/watch?v=2LaAJq1lB1Q