Semester –VII (Final Year)
Proposed Scheme w.e.f. July – 2023

Course Category	Course Code	Course Title	Weakly Teaching Hrs			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
	BTCOC701	Artificial Intelligence	3	-	-	20	20	60	100	3
	BTCOC702	Cloud Computing	3	-	-	20	20	60	100	3
	BTCOE703	Elective – VI (A) Bioinformatics (B) Distributed System (C) Big Data Analytics	3	-	-	20	20	60	100	3
	BTCOE704	Open Elective – VII (A) Cryptography and Network Security (B) Business Intelligence (C) Block chain Technology	3	-	-	20	20	60	100	3
	BTCOE705	Open Elective – VIII (A) Virtual Reality (B) Deep Learning (C) Design Thinking	3	-	-	20	20	60	100	3
	BTHM706	Foreign Language Studies	-	-	4	-	-	-	-	Audit
	BTCOL707	Artificial Intelligence & Cloud Computing Lab	-	-	4	60	-	40	100	2
	BTCOS708	Project Phase – I	-	-	-	60	-	40	100	2
	BTCOF608	Field Training / Internship / Industrial Training	-	-	-	-	-	-	-	Audit
		TOTAL	**15**	**-**	**8**	**220**	**100**	**380**	**700**	**19**

BTCOE702 Cloud Computing

[**Lecture: 3 Periods/Week**   **CA: 20 Marks**
End Semester Examination: 60 Marks   **MSE: 20 Marks**

Prerequisites: Discrete Mathematics, Computer Networks

Course Objectives:
1. To understand the concepts of Cloud Computing.
2. To learn Taxonomy of Virtualization Techniques.
3. To learn Cloud Computing Architecture.
4. To acquire knowledge on Aneka Cloud Application Platform.
5. To learn Industry Cloud Platforms.

Course Outcomes:
At the end of this course student will:
CO1) Understand the concept of virtualization and how this has enabled the development of
Cloud Computing
CO2) Know the fundamentals of cloud, cloud Architectures and types of services in cloud
CO3) Understand scaling, cloud security and disaster management
CO4) Design different Applications in cloud
CO5) Explore some important cloud computing driven commercial systems

UNIT 1
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.

UNIT 2
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.

UNIT 3
Defining the Clouds for Enterprise: Storage as a service, Database as a service, Process as a service, Information as a service, Integration an s a service and Testing as a service. Scaling a cloud infrastructure **-**Capacity Planning, Cloud Scale.

UNIT 4
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 de, Cloud Programming and Management, Aneka SDK, Management Tools.

UNIT 5
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.

Learning Resource

Text Books
1. Mastering Cloud Computing by Raj Kumar Buyya, Christian Vecchiola, and 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 collaborate Online – Micheal Miller.Pearson Education.

NPTEL Course:
1. Cloud Computing, Prof. Soumya Kanti Ghosh, Department of Computer Science and
Engineering, IIT Kharagpur