IV YEAR SEM-1 B.Tech CSE	Eelective	L	T	P	C
CODE: CS4507	Advanced Cloud Computing	2	2	0	4

UNIT I (Introduction to Cloud Computing)

Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others, Organizational scenarios of clouds, Administering & Monitoring cloud services, benefits and limitations, Deploy application over cloud, Comparison among SAAS, PAAS, IAAS Cloud computing platforms: Infrastructure as service: Amazon EC2,Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing.

Unit II (Virtualization and Resource Provisioning in Clouds)

Introduction to Cloud Technologies, Study of Hypervisors Virtualization Technology: Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization Multitenant software: Multi-entity support, Multi-schema approach, Multi-tenancy using cloud data stores, Data access control for enterprise applications..

Unit III (Data Management in Clouds)

Data in the cloud: Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo. Map-Reduce and extensions: Parallel computing, Introduction to cloud development, Example/Application of MapReduce, Features and comparisons among GFS,HDFSetc, Map-Reduce model.

UNIT IV (Security in Clouds)

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro-architectures; Identity Management and Access control-Identity management, Access control, Autonomic Security Cloud computing security challenges: Virtualization security management- virtual threats, VM Security Recommendations, VM-Specific Security techniques, Secure Execution Environments and Communications in cloud.

Unit V (Programming Enterprise Clouds using Aneka)

Introduction, Aneka Architecture, Aneka Deployment, Parallel Programming Models, Thread Programming using Aneka, Task Programming using Aneka, and MapReduce Programming using Aneka, Parallel Algorithms, Parallel Data mining, Parallel Mandelbrot, and Image Processing.

Unit VI (Advanced Topics and Cloud Applications)

Cloud computing platforms, Installing cloud platforms and performance evaluation, Features and functions of cloud platforms: Xen Cloud Platform, Eucalyptus, OpenNebula, Nimbus, Apache Virtual Computing Lab (VCL).

Text Books:
1. RajkumarBuyya, Christian Vecchiola, and ThamaraiSelvi, Mastering Cloud Computing, Tata McGraw Hill, New Delhi, India, 2013.

Reference Books:
1. Distributed and Cloud Computing: From Parallel Processing to the Internet of Things, Kai Hwang , Jack Dongarra , Geoffrey C. Fox.

Video Reference:

Title	Expert Name	Affiliation	Weblink
Introduction to Information Security	Prof. D Kamkoti	IIT -Madras	**http://nptel.ac.in/courses/106106129/28**