



Department of Information Technology		LP: IT16704 Rev. No: 00 Date:27/06/2019
B.E/B.Tech/M.E/M.Tech	: IT Regulation: 2016	
PG Specialisation	: -	
Sub. Code / Sub. Name	: IT16704 – Cloud Computing	
Unit	: I	

**Unit Syllabus**

**UNIT I INTRODUCTION**

Introduction – Scalable Computing over the Internet-System - Models for Distributed and Cloud Computing – Design Principles of Computer Clusters-Cluster Job and Resource Management-Cloud Computing Architecture – The Cloud Reference Model – Cloud Characteristics – Cloud Deployment Models: Public, Private, Community, Hybrid Clouds - Categories of cloud computing: Everything as a service: Infrastructure, platform, software - Pros and Cons of cloud computing.

**Objective:**

Students are given an overview of Distributed cloud computing and the broad perceptives of Cloud architecture and model.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Introduction - Scalable computing over the Internet	1 - CH1.1(Pg 4-13),	BB/LCD
2	Models for Distributed and Cloud Computing	1-CH1.3(Pg 27-36)	BB/LCD
3	Design Principles of Computer Clusters	1-CH2.3(Pg 87-104)	BB/LCD
4	Cluster Job and Resource Management	1-CH2.4(Pg 104-112)	BB/LCD
5	Cloud Computing Architecture	2-CH11,12,13(Pg 255-358)	BB/LCD
6	Cloud Computing Architecture - The Cloud Reference Model	Internet	BB/LCD
7	Cloud Characteristics – Cloud Deployment Models: Public,Private, Community, Hybrid Clouds	2-CH4.2(Pg 58-62) 2-CH4.4(Pg 73-78)	BB/LCD
8	Categories of cloud computing: Everything as a service: Infrastructure, platform, software computing.	2-CH4.3(Pg 63-72)	BB/LCD
9	Pros and Cons of Cloud	Internet	BB/LCD
<b>Content beyond syllabus covered (if any):</b>			

\* Session duration: 50 minutes



**Sub. Code / Sub. Name: IT16704 - CLOUD COMPUTING**  
**Unit : II**

**Unit Syllabus:****UNIT II VIRTUALIZATION**

Introduction, Virtualized Environment characteristics, Server Virtualization, Implementation levels of virtualization – virtualization structure – virtualization of CPU, Memory and I/O devices – Virtualization for data center automation - Virtualization Management- Storage Virtualization – Network Virtualization.

**Objective**

Students acquire the knowledge about the concept of Virtualization and its Managements.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Introduction, Virtualized Environment characteristics-	Internet	BB/LCD
11	Server Virtualization	Internet	BB/LCD
12	Implementation levels of virtualization	1-CH3.1(Pg 130 140)	BB/LCD
13	Virtualization structure	1-CH3.2(Pg 140-145)	BB/LCD
14	virtualization of CPU, Memory and I/O devices	1-CH3.3(Pg 145-155)	BB/LCD
15	Virtualization for data center automation	1-CH3.5(Pg 169 176)	BB/LCD
16	Virtualization Management	Internet	BB/LCD
17	Storage Virtualization	1- CH3.5.2(Pg 171-172)	BB/LCD
18	Network Virtualization.	Internet	BB/LCD
<b>Content beyond syllabus covered (if any):</b>			

\* Session duration: 50 mins

**Sub. Code / Sub. Name: IT16704 - CLOUD COMPUTING****Unit : III**

Unit Syllabus:

**UNIT III CLOUD COMPUTING MECHANISM**

Cloud Infrastructure Mechanism: Cloud Storage, Cloud Usage Monitor, Resource Replication – Specialized Cloud Mechanism: Load Balancer, SLA Monitor, Pay-per-use Monitor, Audit Monitor, Failover System, Hypervisor, Resource Cluster, Multi Device Broker, State Management Database – Cloud Management Mechanism: Remote Administration System, Resource Management System, SLA Management System, Billing Management System.

**Objective**

To study about cloud storage and different cloud management mechanism.

Session No	Topics to be covered	Ref	Teaching Aids
19	Cloud Infrastructure Mechanism: Cloud Storage,	2- Ch-7, (Pg 139-152)	BB/LCD
20	Cloud Infrastructure Mechanism: Cloud Usage Monitor, Resource Replication	2- Ch-7, (Pg 155-157, 161-162)	BB/LCD
21	Specialized Cloud Mechanism: Load Balancer, SLA Monitor	2-Ch-8.2,8.3 (Pg 176-177,178-180)	BB/LCD
22	Specialized Cloud Mechanism- Pay-per-use Monitor, Audit Monitor	2-Ch-8.4,8.5 (Pg 184-187, 178-180)	BB/LCD
23	Specialized Cloud Mechanism- Failover System, Hypervisor,	2-Ch-8.6,8.7 (Pg-191-196,200-201)	BB/LCD
24	Specialized Cloud Mechanism - Resource Cluster , Multi Device Broker, State Management Database	2-Ch-8.8 - 8.10 Pg-203-206,208- 209,210-211	BB/LCD
25	Cloud Management Mechanism: Remote Administration System	2-Ch-9,9.1 Pg-213, 214-219	BB/LCD
26	Cloud Management Mechanism: Resource Management System	2-Ch-9.2 Pg-219-221	BB/LCD
27	Cloud Management Mechanism: SLA Management System, Billing Management System.	2-Ch-9.3 Pg-222-224,225-227	BB/LCD
<b>Content beyond syllabus covered (if any): NIL</b>			

\* Session duration: 50 mins

**Sub. Code / Sub. Name: IT16704 - CLOUD COMPUTING****Unit : IV**

Unit Syllabus:

**UNIT IV PROGRAMMING MODEL AND SECURITY**

Main components and Programming model - Introduction to Hadoop Framework - Mapreduce, Input splitting, map and reduce functions, specifying input and output parameters, configuring and running a job – Design of Hadoop file system, HDFS concepts, command line and java interface, dataflow of File read & File write. Security: Data Security and Storage - Cloud Infrastructure security: network, host and application level – Cloud Security Mechanisms (Encryption, PKI, SSO, IAM).

**Objective**

To understand the different programming model of Hadoop Framework and data security of cloud computing.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Main components and Programming model - Introduction to Hadoop Framework	3-CH1(Pg 4-7)	BB/LCD
29	Mapreduce, Input splitting, map and reduce functions	3-CH2(Pg 27-34)	BB/LCD
30	Specifying input and output parameters, configuring and running a job	3-CH2(Pg 36-53)	BB/LCD
31	Design of Hadoop file system- HDFS concepts	3-CH3(Pg 89-91) 4-CH3(Pg 43-48)	BB/LCD
32	HDFS command line and java interface	4-CH3(Pg 49-67)	BB/LCD
33	dataflow of File read & File write	4-CH3(Pg 67-74)	BB/LCD
34	Security: Data Security and Storage	5-CH4(Pg 61-71)	BB/LCD
35	Cloud Infrastructure security: network, host and application level	5-CH3(Pg 35-59)	BB/LCD
36	Cloud Security Mechanisms (Encryption, PKI, SSO, IAM)	5-CH5(Pg 77-80) Internet	BB/LCD
<b>Content beyond syllabus covered (if any):</b>			

\* Session duration: 50 mins

**Sub. Code / Sub. Name: IT16704 - CLOUD COMPUTING****Unit : V**

Unit Syllabus:

**UNIT V CASE STUDIES & TOOLS**

Case Studies of Top Supercomputer Systems – Virtualization : Xen, VMWare, Microsoft Hyper-V – Examples of Cloud Service Providers(SaaS,PaaS,IaaS)-Emerging Cloud software Environments: Open Source Eucalyptus and Nimbus - Open Nebula, Sector/Sphere and Open Stack.

**Objective**

To gain knowledge about Virtualization and Cloud Software Environment tools.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Case Studies of Top Supercomputer Systems	1-Ch2 (Pg 112-121)	BB/LCD
38	Virtualization : Xen, VMWare	1-Ch3 (Pg 140-141), Internet	BB/LCD
39	Virtualization : Microsoft Hyper-V	Internet	BB/LCD
40	Examples of Cloud Service Providers (SaaS,PaaS)	5- Ch9 (Pg 203-213) Internet	BB/LCD
41	Examples of Cloud Service Providers (IaaS)	5-Ch9 (Pg 203-213) Internet	BB/LCD
42	Emerging Cloud software Environments: Open Source Eucalyptus and Nimbus	1-Ch6 (Pg 387-389)	BB/LCD
43	Open Nebula	1-Ch6 (Pg 389-390) Internet	BB/LCD
44	Sector/Sphere	1-Ch6 (Pg 390-391) Internet	BB/LCD
45	Open Stack.	1-Ch6 (Pg 391-393) Internet	BB/LCD
<b>Content beyond syllabus covered (if any): KVM</b>			

\* Session duration: 50 mins



Sub Code / Sub Name: **IT16704 - CLOUD COMPUTING**

Course Outcome 1: Understand service models, deployment model and virtualization.

Course Outcome 2: Understand Cloud Infrastructure Mechanism.

Course Outcome 3: Learn Big data scenario using HDFS and Cloud Software Environment tools.

**Mapping CO – PO:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												

A – Strong ; B – Moderate; C – weak



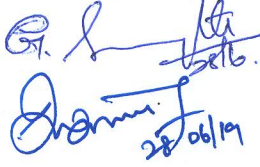

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**TEXT BOOK:**

1. Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, —Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet, First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012.
2. Thomas Erl , Ricardo Puttini, Zaigham Mahmood,|| Cloud Computing: Concepts, Technology & Architecture, First Edition, Prentice Hall,2013.

**REFERENCES:**

3. Jason Venner, —Pro Hadoop- Build Scalable, Distributed Applications in the Cloud, A Press, 2009
4. Tom White, —Hadoop The Definitive Guidel, First Edition. O'Reilly, 2009.
5. Tim Master, Subra Kumaraswamy, Shahed Latif, Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, O' Reily Media, Sep 2009.

	Prepared by	Approved by
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Date	28/06/2019	28/06/2019
Remarks *:		
Remarks *:		

\* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD