SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of **INFORMATION TECHNOLOGY**		LP: IT18703 Rev. No: 00 Date:23/07/2021
B.E/B.Tech/M.E/M.Tech : IT PG Specialisation : - Sub. Code / Sub. Name : IT18703 – Cloud Computing Unit : I	Regulation: 2018	

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 perspective of Cloud architecture and model.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Introduction - Scalable computing over the Internet	T1,CH1.1(Pg 4-13), R6,CH1.2(Pg 14-12)R7,CH1.1(Pg 4-5)	LCD / ONLINE
2	Models for Distributed and Cloud Computing	T1,CH1.3(Pg 27-36)	LCD / ONLINE
3	Design Principles of Computer Clusters	T1,CH2.3(Pg 87-104)	LCD / ONLINE
4	Cluster Job and Resource Management	T1,CH2.4(Pg 104-112)	LCD / ONLINE
5	Cloud Computing Architecture	T2,CH11,12,13(Pg 255-358)	LCD / ONLINE
6	Cloud Computing Architecture - The Cloud Reference Model	T2,CH11	LCD / ONLINE
7	Cloud Characteristics – Cloud Deployment Models: Public,Private, Community, Hybrid Clouds	T2,CH4.2(Pg 58-62) T2,CH4.4(Pg 73-78)	LCD / ONLINE
8	Categories of cloud computing: Everything as a service: Infrastructure, platform, software computing.	T2,CH4.3(Pg 63-72)	LCD / ONLINE
9	**Software environments for distributed systems and cloud.** Pros and Cons of Cloud	Internet	LCD / ONLINE
Content beyond syllabus covered (if any): Software environments for distributed systems and cloud.			

* Session duration: 50 minutes

Sub. Code / Sub. Name: IT18703 - 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- Server Virtualization	Internet	LCD / ONLINE
11	Implementation levels of virtualization	T1,CH3.1(Pg 130 140)	LCD / ONLINE
12	Virtualization structure	T1,CH3.2(Pg 140-145)	LCD / ONLINE
13	virtualization of CPU, Memory and I/O devices	T1,CH3.3(Pg 145-155)	LCD / ONLINE
14	Virtualization for data center automation	T1,CH3.5(Pg 169 176)	LCD / ONLINE
15	Virtualization Management	Internet	LCD / ONLINE
16	Storage Virtualization	Internet	LCD / ONLINE
17	Network Virtualization.	Internet	LCD / ONLINE
18	Summary		LCD / ONLINE
CONTINUOUS ASSESSMENT TEST – I			
Content beyond syllabus covered (if any):			

*** Session duration: 50 mins**

Sub. Code / Sub. Name: IT18703 - 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 learn about different types of data storage, data processing and management of data in cloud environment.

Session No	Topics to be covered	Ref	Teaching Aids
1	Cloud Infrastructure Mechanism: Cloud Storage,	T2, Ch-7, Pg – 139-152	BB/LCD / ONLINE
2	Cloud Infrastructure Mechanism: Cloud Usage Monitor, Resource Replication	T2, Ch-7, Pg –155-157,161-162	BB/LCD / ONLINE
3	Specialized Cloud Mechanism: Load Balancer, SLA Monitor	T2,Ch-8.2,8.3 Pg-176-177,178-180	BB/LCD / ONLINE
4	Specialized Cloud Mechanism- Pay-per-use Monitor, Audit Monitor	T2,Ch-8.4,8.5 Pg-184-187,178-180	BB/LCD / ONLINE
5	Specialized Cloud Mechanism- Failover System, Hypervisor,	T2,Ch-8.6,8.7 Pg-191-196,200-201,	BB/LCD / ONLINE
6	Specialized Cloud Mechanism - Resource Cluster , Multi Device Broker, State Management Database	T2,Ch-8.8 - 8.10 Pg-203-206,208-209,210-211	BB/LCD / ONLINE
7	Cloud Management Mechanism: Remote Administration System	T2,Ch-9,9.1 Pg-213, 214-219	BB/LCD / ONLINE
8	Cloud Management Mechanism: Resource Management System	T2,Ch-9.2 Pg-219-221	BB/LCD / ONLINE
9	Cloud Management Mechanism: SLA Management System, Billing Management System.	T2,Ch-9.3 Pg-222-224,225-227	BB/LCD / ONLINE
Content beyond syllabus covered (if any): NIL			

* Session duration: 50 mins

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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 apply different programming models using Hadoop MapReduce framework and to learn about various cloud infrastructure and cloud security mechanisms.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Main components and Programming model - Introduction to Hadoop Framework	R3,CH1(Pg 4-7)	LCD / ONLINE
29	Mapreduce, Input splitting, map and reduce functions	R3,CH2(Pg 27-34)	LCD / ONLINE
30	Specifying input and output parameters, configuring and running a job	R3,CH2(Pg 36-53)	LCD / ONLINE
31	Design of Hadoop file system- HDFS concepts	R3,CH3(Pg 89-91) R4,CH3(Pg 43-48)	LCD / ONLINE
32	HDFS command line and java interface	R4,CH3(Pg 49-67)	LCD / ONLINE
33	dataflow of File read & File write	R4,CH3(Pg 67-74)	LCD / ONLINE
34	Security: Data Security and Storage	R5,CH4(Pg 61-71)	LCD / ONLINE
35	Cloud Infrastructure security: network, host and application level	R5,CH3(Pg 35-59)	LCD / ONLINE
36	Cloud Security Mechanisms (Encryption, PKI, SSO, IAM)	R5,CH5(Pg 77-80) Internet	LCD / ONLINE
CONTINUOUS ASSESSMENT TEST – II			
Content beyond syllabus covered (if any):			

*** Session duration: 50 mins**

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Sub. Code / Sub. Name: IT18703 - 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 exposure on various cloud software environment tools with different case studies.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Case Studies of Top Supercomputer Systems	T1,Ch2 (Pg 112-121)	LCD / ONLINE
38	Virtualization : Xen, VMWare	T1,Ch3 (Pg 140-141), Internet	LCD / ONLINE
39	Virtualization : Microsoft Hyper-V	Internet	LCD / ONLINE
40	Examples of Cloud Service Providers (SaaS,PaaS)	R5 Ch9 (Pg 203-213)	LCD / ONLINE
41	Examples of Cloud Service Providers (IaaS)	R5 Ch9 (Pg 203-213)	LCD / ONLINE
42	Emerging Cloud software Environments: Open Source Eucalyptus and Nimbus	T1,Ch6 (Pg 387-389)	LCD / ONLINE
43	Open Nebula	T1,Ch6 (Pg 389-390) Internet	LCD / ONLINE
44	Sector/Sphere	T1,Ch6 (Pg 390-391) Internet	LCD / ONLINE
45	Open Stack.	T1,Ch6 (Pg 391-393) Internet	LCD / ONLINE
CONTINUOUS ASSESSMENT TEST – III			
Content beyond syllabus covered (if any): KVM			

*** Session duration: 50 mins**

Sub Code / Sub Name: **IT18703 - CLOUD COMPUTING**

Course Outcome 1: Understand service models, deployment model and virtualization.
Course Outcome 2: Learn programming model for Virtualization.
Course Outcome 3: Understand Cloud Infrastructure Mechanism.
Course Outcome 4: Learn Big data scenario using HDFS
Course Outcome 5: Learn about various security issues in Cloud.
Course Outcome 6: Learn about Cloud Software Environment tools.

Mapping CO – PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	X	X		X		X		X	X	X	X	X
CO2	X	X		X	X		X		X	X		X
CO3	X		X	X		X			X	X		X
CO4	X	X		X	X		X		X	X		X
CO5	X		X	X	X	X	X	X	X	X	X	X
CO6	X	X	X	X	X	X	X		X	X	X	X

A – Strong ; B – Moderate; C - weak

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 Guide‖, 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.

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	Prepared by	Approved by
Signature	V.M 23/7/2021 23/7/2021	23/7/21
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Date	23/07/2021	23/07/2021
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