MOHAMMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN

Department of Computer Science and Engineering

Name of the Subject	CLOUD COMPUTING	Name of the handling Faculty	Mrs.Ismail
Subject Code	CS8791	Year / Sem	IV/VII
Acad Year	2021-2022	Batch	2018-2022

Course Objective

1. Understand how cloud computing helps in solving large scale scientific problems.
2. Gain knowledge on the concept of virtualization that is fundamental to cloud computing.
3. Learn how to lead playes in cloud.
4. Understand the security issues in cloud environment.
5. Understand the privacy keys

Course Outcome

Upon completion of the course, the students will be able to:

CO1.Articulate the main concepts, key technologies, strengths and limitations of cloud computing.

CO2. Learn the key and enabling technologies that help in the development of cloud.

CO3. Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models

CO4. .Explain the core issues of cloud computing such as resource management and security and Be able to install and use current cloud technologies.

CO5. Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
UNIT-I	**INTRODUCTION**						
1	Introduction to Cloud Computing,Definition of Cloud	T1	1	PPT	L1	CO1	PO1
2	Evolution of Cloud Computing	T1	1	BB	L1	CO1	PO1
3	Underlying Principles of Parallel and Distributed	T1	1	BB	L2	CO1	PO2
4	Cloud Characteristics	T1	1	BB	L2	CO1	PO2
5	Cloud Characteristics	T1	1	PPT	L2	CO1	PO1
6	Elasticity in Cloud	T1	1	PPT	L2	CO1	PO1
7	Elasticity in Cloud	R3	1	PPT	L2	CO1	PO2
8	On-demand Provisioning.	R3	1	PPT	L2	CO1	PO2
9	On-demand Provisioning.	R3	1	PPT	L2	CO1	PO2
Suggested Activity: Assignment / Case Studies / Tutorials/ Quiz / Mini Projects / Model Developed/others Planned if any : Quiz							
Evaluation method : Test							
UNIT II	**CLOUD ENABLING TECHNOLOGIES**						
10	Service Oriented Architecture,REST and Systems	T1	1	BB	L2	CO2	PO1
11	Web Services ,Publish,Subscribe Model	T1	1	PPT	L3	CO2	PO2
12	Basics of Virtualization – Types of Virtualization	T1	1	BB	L2	CO2	PO3
13	Implementation Levels of Virtualization	T1	1	BB	L3	CO2	PO1
14	Virtualization Structures – Tools and Mechanisms	T1	1	BB	L3	CO2	PO2
15	Virtualization of CPU – Memory	T1	1	BB	L3	CO2	PO3
16	I/O Devices	T1	1	PPT	L3	CO3	PO3
17	Virtualization Support and Disaster Recovery.	T1	1	PPT	L3	CO3	PO3
18	virtualization Support and Disaster Recovery.	T1	1	PPT	L3	CO3	PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any: Assignment topics: OGSA							
Evaluation method : Mark Based							
UNIT III	**CLOUD ARCHITECTURE, SERVICES AND STORAGE**						
19	Layered Cloud Architecture Design	T1	1	BB	L2	CO4	PO1
20	NIST Cloud Computing Reference Architecture	R4	1	PPT	L2	CO4	PO2
21	Public, Private and Hybrid Clouds - laaS – PaaS –	T1	1	BB	L2	CO4	PO2
22	Architectural Design Challenges	T1	1	PPT	L2	CO4	PO3
23	Cloud Storage	R4	1	BB	L2	CO4	PO2

24	Storage-as-a-Service	T1,R1	1	PPT	L2	CO4	PO3
25	Advantages of Cloud Storage	T1	1	PPT	L3	CO4	PO2
26	Cloud Storage Providers	T1	1	BB	L3	CO4	PO3
27	Cloud Storage Providers	T1	1	BB	L3	CO4	PO3
Suggested Activity: Assignment / Case Studies / Tutorials/ Quiz / Mini Projects / Model Developed/others Planned if any: Assignment topics: Virtualization							
Evaluation method : Mark Based							
UNIT IV	RESOURCE MANAGEMENT AND SECURITY IN CLOUD						
28	Inter Cloud Resource Management	T1	1	PPT	L1	CO5	PO1
29	Resource Provisioning and Resource Provisioning	T1	1	PPT	L2	CO5	PO1
30	Global Exchange of Cloud Resources	T1	1	PPT	L4	CO5	PO1
31	Security Overview – Cloud Security Challenges	T1	1	PPT	L2	CO5	PO1
32	Software-as-a-Service	T1	1	PPT	L2	CO5	PO1
33	Software-as-a-Service	R1	1	BB	L3	CO5	PO3
34	Security Governance	R1	1	BB	L2	CO2	PO2
35	Virtual Machine Security	R2	1	BB	L2	CO2	PO3
36	IAM – Security Standards	R2	1	BB	L2	CO3	PO3
Suggested Activity: Assignment / Case Studies / Tutorials/ Quiz / Mini Projects / Model Developed/others Planned if any: Role play							
Evaluation method : Marks based on their presentation and points							
UNIT V	CLOUD TECHNOLOGIES AND ADVANCEMENTS						
30	Hadoop – MapReduce – Virtual Box	T1	1	BB	L2	CO2	PO1
31	Google App Engine	R1	1	BB	L2	CO3	PO1
32	Programming Environment for Google App Engine	R1	1	BB	L4	CO3	PO1
33	Programming Environment for Google App	R1	1	BB	L2	CO2	PO1
34	Open Stack – Federation in the Cloud	R1	1	BB	L4	CO2	PO1
35	Four Levels of Federation	R1	1	BB	L3	CO2	PO3
36	Four Levels of Federation	R1	1	BB	L3	CO3	PO3
37	Federated Services and Applications	R1	1	BB	L3	CO5	PO3
38	Future of Federation.	R1	1	BB	L3	CO5	PO3
Suggested Activity: Assignment / Case Studies / Tutorials/ Quiz / Mini Projects / Model Developed/others Planned if any: Assignment topics: Saas,Paas,Iaas							
Evaluation method : Marks based							
Content Beyond the Syllabus Planned							
1	1.Data center 2.AWS 3.Cloud management						
Text Books							
1	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.						
Reference Books							
1	Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, —Mastering Cloud Computing‖, Tata Mcgraw Hill, 2013.						
2	Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing - A Practical Approach‖, Tata Mcgraw Hill, 2009.						
3	George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and						
Website / URL References							
1	http://nptel.ac.in/						

Blooms Level

Level 1 (L1) : Remembering Level 2 (L2) : Understanding Level 3 (L3) : Applying	Lower Order Thinking	Fixed Hour Exams	Level 4 (L4) : Analysing Level 5 (L5) : Evaluating Level 6 (L6) : Creating	Higher Order Thinking	Projects / Mini Projects

Mapping syllabus with Bloom's Taxonomy LOT and HOT

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	INTRODUCTION	2	7	0	0	0	0	9	0	9
Unit 2	CLOUD ENABLING TECHNOLOGIES	0	2	7	0	0	0	9	0	9
Unit 3	CLOUD ARCHITECTURE, SERVICES AND STORAGE	0	6	3	0	0	0	9	0	9

Unit 4	**RESOURCE MANAGEMENT AND SECURITY IN CLOUD**	1	6	**1**	**1**	**0**	**0**	8	1	9
Unit 5	**CLOUD TECHNOLOGIES AND ADVANCEMENTS**	0	3	**4**	**2**	**0**	**0**	7	2	9
Total		3	24	15	3	0	0	42	3	45
Total Percentage		6.67	53.33	33.33	6.67	0.00	0.00	93.33	6.67	100

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO2	3	2	3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO3	3	2	3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO4	3	2	3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO5	3	2	3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
Avg	**3**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	3	2

Justification for CO-PO mapping

CO1	**Computing techniques to solve large scale scientific problems (Engg.Knowledge, Maths)**
CO2	**Apply the concept of virtualization. (Engg.Knowledge)**
CO3	**Use the grid and cloud tool kits in virtualization data center(Engg.Knowledge)**
CO4	**Apply the security models in the grid and the cloud environment (Engg. Science)**
CO5	**Explain the security architecture design and various sectors (Design solutions for Complex engg problems)**

3	**High level**	**2**	**Moderate level**	**1**	Low level

Name & Sign of Subject Expert : Mrs.Ismail
Head of the Department :CSE