

## 6.2 CLOUD COMPUTING

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4 - 4

### RATIONALE

This course offers a good understanding of cloud computing concepts and challenges faced in implementation of cloud computing.

### LEARNING OUTCOMES

After undergoing the subject, the students would be able to:

- explain core concepts of cloud computing paradigm.
- explain various Service Models
- explain various Deployment Models.
- describe SLA management in Cloud Computing
- explain and apply the concept of virtualization.
- describe the scheduling of tasks in cloud.
- illustrate the fundamental concepts of cloud storage.
- describe various security issues in the cloud.
- make use of cloud.

### DETAILED CONTENTS

1. Introduction (08 Periods)  
Evolution of Cloud Computing, Cloud Computing Overview, Characteristics, Applications, Benefits, Challenges.
2. Service and Deployment Models (08 Periods)
  - 2.1 Cloud Computing Service Models: Infrastructure as a Service, Platform as a Service, Software as a Service;
  - 2.2 Cloud Computing Deployment Models: Private Cloud; Public Cloud, Community Cloud, Hybrid Cloud, Major Cloud Service providers.

3. Service Level Agreement (SLA) Management (06 Periods)

Overview of SLA, Types of SLA, SLA Life Cycle, SLA Management Process.

4. Virtualization Concepts (08 Periods)

Overview of Virtualization, Types of Virtualization, Benefits of Virtualization, Hypervisors.

5. Cloud Security (06 Periods)

Infrastructure Security, Data Security & Privacy Issues, Legal Issues in Cloud Computing.

6. Cloud Storage (08 Periods)

Overview; Storage as a Service, Benefits and Challenges, Storage Area Networks (SANs).

7. Scheduling in Cloud (12 Periods)

Overview of Scheduling problem, Different types of scheduling, Scheduling for independent and dependent tasks, Static vs. Dynamic scheduling.

#### **LIST OF PRACTICALS**

1. Introduction to Cloud Vendors: Amazon, Microsoft, IBM.
2. Setting up Virtualization using Virtualbox/VMWare Hypervisor
3. Introduction to OwnCloud
4. Installation and configuration of OwnCloud software for SaaS
5. Accessing Microsoft AZURE cloud-services
6. Cloud Simulation Software Introduction: CloudSim

#### **INSTRUCTIONAL STRATEGY**

In addition to classroom teaching, the teacher should demonstrate the practical usage of cloud using real cloud services.

#### **MEANS OF ASSESSMENT**

- Assignments and Quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work and Viva-Voce

#### **RECOMMENDED BOOKS**

1. Rajkumar Buyya, James Broberg, Andrzej Goscinski (Editors): Cloud Computing: Principles and Paradigms, Wiley, 2011

2. Kumar Saurabh, Cloud Computing, Wiley, 2012.
3. Barrie Sosinsky: Cloud Computing Bible, Wiley, 2011.
4. Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper: Cloud Computing for Dummies, Wiley, 2010
5. E-books/e-tools/relevant software to be used as recommended by AICTE/NITTTR, Chandigarh.

**Websites for Reference:** <http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

<b>Topic No.</b>	<b>Time Allotted (Periods)</b>	<b>Marks Allotted (%)</b>
1.	08	14
2.	08	14
3.	06	11
4.	08	14
5.	06	11
6.	08	14
7.	12	22
<b>Total</b>	<b>56</b>	<b>100</b>