Course Title: Cloud Computing
Course Code: SEC-302 (B)
Course Credit: 3
Session Per Week: 3
Total Teaching Hours: 40 Hours

AIM

To uncover the core concepts of cloud computing to the students and at the same time providing ample foundations to enable further study, research and implementation of cloud computing services.

LEARNING OUTCOMES

On the completion of the course students will:
1. Visualize the various cloud computing environments.
2. Understand the core concepts of parallel, distributed computing and its architecture.
3. Learn and implement virtualization environments.
4. Articulate the insights of cloud computing architecture and its types.

DETAIL SYLLABUS

Unit-1   **10 Hours**

Introduction
Cloud Computing at a glance
- The vision of cloud computing
- Defining a cloud
- A closer look
- The cloud computing reference model
- Characteristics and benefits
- Challenges ahead

Historical Developments
- Distributed systems
- Virtualization
- Web 2.0

Build Cloud Computing Environments
- Computing platforms and technologies
- Amazon Web Services (AWS)
- Google AppEngine
- Microsoft Azure
- Hadoop

Unit-2   **10 Hours**

Principles of Parallel and Distributed Computing
Eras of computing
Parallel vs. distributed computing
Elements of parallel computing

- What is parallel processing?
- Hardware architectures for parallel processing
- Approaches to parallel programming

Elements of distributed computing
- General concepts and definitions
- Components of a distributed system
- Architectural styles for distributed computing
- System architectural styles
- Models for interprocess communication

Technologies for distributed computing
- Service-oriented computing

Unit-3   **10 Hours**
Virtualization
Introduction
Characteristics of virtualized environments
Taxonomy of virtualization techniques
- Execution virtualization
- Machine reference model
- Other types of virtualization

Virtualization and cloud computing
Pros and cons of virtualization
Technology examples
- VMware: full virtualization
- Virtualization Solution
- End-user (desktop) virtualization

Unit-4   **10 Hours**
Cloud Computing Architecture
Introduction
The cloud reference model
- Architecture
- Infrastructure- and hardware-as-a-service
- Platform-as-a-service
- Software-as-a-service

Types of clouds
- Public clouds
- Private clouds
- Hybrid clouds
- Community clouds

Economics of the cloud

TEXTBOOK:
1) Mastering Cloud Computing : Foundations and Applications Programming
   By Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi
   Publication: McGraw Hill Education

REFERENCE BOOK:

1) Essentials of Cloud Computing
   By K. Chandrasekaran
   Publication: CRC press, 2015

WEB RESOURCES:
Supplemental materials for instructors or students can be downloaded from else were:
1) http://store.elsevier.com/product.jsp?isbn=9780124114548
2) https://www.tutorialspoint.com/cloud_computing/index.htm
3) https://www.geeksforgeeks.org/cloud-computing/
4) https://www.w3schools.in/cloud-computing/cloud-computing/