



# Marwadi University

## Master of Science (Information Technology)

### Semester III

**Subject Code: 02MS0305**

**Subject Name: (Elective-II) Cloud Computing (CC)**

#### Learning Objectives:

- To provide an understanding of the basic concepts of parallel and distributed computing and their role in Cloud Computing.
- To understand the importance of Cloud computing for higher throughput and availability
- To make aware about various Cloud platforms
- To study different applications of Cloud and Cloud management techniques

#### Prerequisites:

- Basics of Computer Networks
- Basics of Operating Systems

Unit	Course Content	Hours
1	<b>Cloud Computing Basics:</b> <ul style="list-style-type: none"><li>• Cloud Computing (NIST Model) Introduction to Cloud Computing, History of Cloud Computing, Cloud service providers</li><li>• Properties, Characteristics &amp; Disadvantages Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing</li></ul>	04
2	<b>Cloud Infrastructure:</b> <ul style="list-style-type: none"><li>• Cloud Architecture, Cloud Computing Reference Model</li><li>• Service Models (XaaS)<ul style="list-style-type: none"><li>▪ Infrastructure as a Service(IaaS)</li><li>▪ Platform as a Service(PaaS)</li><li>▪ Software as a Service(SaaS)</li></ul></li><li>• Deployment Models<ul style="list-style-type: none"><li>▪ Public cloud</li><li>▪ Private cloud</li><li>▪ Hybrid cloud</li><li>▪ Community cloud</li></ul></li></ul>	04
3	<b>Infrastructure as a Service(IaaS):</b> <ul style="list-style-type: none"><li>• Introduction to IaaS IaaS definition, Introduction to virtualization, Different approaches to virtualization, Hypervisors, Machine Image, Virtual Machine(VM) Case Studies</li></ul> <b>Platform as a Service(PaaS):</b> <ul style="list-style-type: none"><li>• Introduction to PaaS What is PaaS, Service Oriented Architecture (SOA)</li></ul>	09

	<p>Case Studies</p> <p><b>Software as a Service(SaaS):</b></p> <ul style="list-style-type: none"> <li>• Introduction to SaaS</li> <li>Web Services, Web OS</li> <li>Case Studies</li> </ul>	
<b>6</b>	<p><b>Cloud Security</b></p> <p>CIA importance, Introduction to Cloud Security, Cloud Security Services, Security threats with cloud, Risk Management</p>	<b>06</b>
<b>4</b>	<p><b>Virtualization Fundamentals:</b></p> <p>Virtualization in Grid, Virtualization in Cloud, Virtualization in Cloud Security</p>	<b>06</b>
<b>5</b>	<p><b>Cloud Storage:</b></p> <p>Overview of Cloud Storage, Cloud Stores, Data Management for Cloud Storage</p>	<b>04</b>
<b>7</b>	<p><b>Case Studies on Cloud Simulators :</b></p> <p>3 tools – 5 hours each</p> <ol style="list-style-type: none"> <li>1. CloudSim</li> <li>2. Eucalyptus</li> <li>3. OpenNebula</li> </ol> <p>Introduction to Dockers</p> <p>Introduction to DevOps</p>	<b>15</b>

**Text Book:**

1. "Cloud Computing A practical approach for learning and implementation" by A. Srinivasan and J. Suresh Pearson Publications.

**Reference Books:**

1. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010
2. Cloud Computing: Principles and Paradigms, Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley, 2011
3. Cloud Computing: Principles, Systems and Applications, Editors: Nikos Antonopoulos, Lee Gillam, Springer, 2012
4. Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Ronald L. Krutz, Russell Dean Vines, Wiley-India, 2010.