

24MCAE205: CLOUD COMPUTING

Hours/Week: 3
Credits: 3

I.A. Marks: 30
Exam. Marks: 70

Course Learning Objectives:

- Characteristics and design principles of grid and cloud computing.
- Security mechanisms in grid and cloud computing applications.
- Designing methodologies of distributed computing and Importance of cloud computing environments.
- The concepts of virtualization and use of cloud service models.

Course Outcomes: After completing the course, the students will be able to,

- Demonstrate in-depth understanding characteristics of grid and cloud computing.
- Demonstrate an in-depth understand of the design principles of grid and cloud computing.
- Illustrate security mechanisms in grid and cloud computing applications.
- Design and demonstrate distributed computing applications.
- Understand the importance of cloud computing environments.
- Understand cloud based data storage, cloud based database solutions and research trends in cloud computing.
- Analyze cloud security issues and applications of Fog computing.

UNIT-I

9 Hrs.

Cloud computing basics: - Cloud computing components- Infrastructure-services-storage applications database services – Deployment models of Cloud- Services offered by Cloud- Benefits and Limitations of Cloud Computing – Issues in Cloud security- Cloud security services and design principles.

UNIT-II

9 Hrs.

Virtualization fundamentals: Virtualization – Enabling technology for cloud computing- Types of Virtualization- Server Virtualization- Desktop Virtualization – Memory Virtualization – Application and Storage Virtualization- Tools and Products available for Virtualization.

UNIT-III

9 Hrs.

SAAS and PAAS: Getting started with SaaS - Understanding the multitenant nature of SaaS solutions- Understanding OpenSaaS Solutions- Understanding Service Oriented Architecture- PaaS- Benefits and Limitations of PaaS. Security as a Service

UNIT-IV

9 Hrs.

IAAS and cloud data storage: - Understanding IaaS- Improving performance through Load balancing- Server Types within IaaS solutions- Utilizing cloud based NAS devices – Understanding Cloud based data storage- Cloud based database solutions- Cloud based block storage. Cloud Applications and security: Open Source and Commercial Clouds, Cloud Simulators, Research trends in Cloud Computing, Fog Computing and applications, Cloud Security challenges.

REFERENCE BOOKS:

1. R. Buyya, C. Vecchiola, S T. Selvi, Mastering Cloud Computing, McGraw Hill (India) Pvt Ltd., 2013
2. Kris Jamsa, Cloud Computing: SaaS, PaaS, IaaS, "Virtualization, Business Models, Mobile, Security and more, Jones & Bartlett Learning Company, 2013

3. Ronald L.Krutz, Russell vines, Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley Publishing Inc., 2010.
4. Gautam Shroff, Enterprise Cloud Computing - Technology, Architecture, Applications, Cambridge University Press, 2010
5. Anthony T .Velte, Toby J.Velte, Robert Elsenpeter, Cloud Computing: A Practical Approach, Tata McGraw Hill Edition, Fourth Reprint, 2010
6. Ronald L. Krutz, Russell Dean Vines, Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley- India, 2010.
7. Antonopoulos, Nick; Gillam, Lee, Cloud Computing Principles, Systems and Applications, Springer, 2010.
8. G. Reese, Cloud Application Architecture, O'Reilly, 2009.

