

## MCAE215: CLOUD COMPUTING

Hours/Week: 3

I.A. Marks: 30

Credits: 3

Exam. Marks: 70

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### Course Learning Objectives: Students will try to learn,

1. Characteristics and design principles of grid and cloud computing.
  2. Security mechanisms in grid and cloud computing applications.
  3. Designing methodologies of distributed computing and Importance of cloud computing environments.
  4. The concepts of virtualization and use of cloud service models.
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### Course Outcomes: After completing the course, the students will be able to,

- CO1: Demonstrate in-depth understanding characteristics of grid and cloud computing.  
CO2: Demonstrate an in-depth understand of the design principles of grid and cloud computing.  
CO3: Illustrate security mechanisms in grid and cloud computing applications.  
CO4: Design and demonstrate distributed computing applications.  
CO5: Understand the importance of cloud computing environments.  
CO6: Understand cloud based data storage, cloud based database solutions and research trends in cloud computing.  
CO7: Analyze cloud security issues and applications of Fog computing.
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#### 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.

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### 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