4/4 B.Tech - FIRST SEMESTER

IT7T5B	**CLOUD COMPUTING**	**Credits:3**
Lecture: 3 Periods/week		**Internal assessment: 30 marks**
Practice/Interaction: 1Period/week		**Semester end examination: 70 marks**

Objectives:
- To provide knowledge on Cloud Computing concepts, technologies and architecture.
- To introduce the concepts of Cloud Computing fundamentals, applications and implementations.
- To identify various areas of information systems in managing the cloud environment.

Outcomes:

Students will be able to
- Understand the architecture and infrastructure of cloud computing.
- Identify services of cloud computing like SaaS ,PaaS ,IaaS.
- Explain the core issues in virtual machine provisioning for cloud infrastructure.
- Identify, Explain and analyze the concepts of Map reducing in cloud environment.
- Understand the concepts of managing the cloud.

Syllabus:

UNIT -I

Introduction to cloud computing- Cloud computing in a Nutshell, Roots of Cloud Computing, Layers and Types of Clouds, Desired Features of a Cloud, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks.

UNIT -II

Enriching the 'Integration as a Service' Paradigm for the Cloud Era--The Onset of Knowledge Era, The Evolution of SaaS, The Challenges of SaaS Paradigm, SaaS Integration Services and products, SaaS Integration Appliances. The Enterprise Cloud Computing Paradigm - Background, Enterprise Cloud Technology and Market Evolution.

UNIT -III

INFRASTRUCTURE AS A SERVICE (IAAS):Virtual Machines Provisioning and Migration Services- Background and Related Work, Virtual Machines Provisioning and Manageability, Virtual Machine Migration Services ,VM Provisioning and Migration in Action, Provisioning in the Cloud Context. On the Management of Virtual Machines for Cloud Infrastructures- The Anatomy of Cloud Infrastructures, Distributed Management of Virtual Infrastructures.

UNIT- IV

Understanding Scientific Applications for Cloud Environments: A Classification of Scientific Applications and Services in the Cloud , SAGA-based Scientific Applications that Utilize Clouds. The MapReduce Programming Model and Implementations: MapReduce Programming Model, Major MapReduce Implementations for the Cloud, MapReduce Impacts and Research Directions.

UNIT- V

Managing the Cloud: Administrating the cloud, Management Responsibilities, life cycle management, cloud management products, Standards. Cloud Security: Securing the cloud, boundary, mapping, -brokered cloud storage access, storage location and tenancy, Encryption. Introducing service oriented architecture.

Text Books:
1. Rajkumar Buyya ,James Broberg, Andrzej Goscinski, CLOUD COMPUTING Principles and Paradigms , Wiley Publishing inc.
2. Barrie Sosinsky Cloud Computing Bible, Wiley Publishing inc.

Reference Books:
1. Michael Miller, Cloud Computing Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2. Judith Hurwitz , Robin Bloor , Marcia Kaufman ,Fern Halper Cloud Computing for Dummies. Wiley publishing inc.
3. Cloud Application Architecture- George Reese.
4. Haley Beard Cloud computing best practices

e-Learning Resources:
1. http://www.slideshare.net/himanshuawasthi2109/cloud-computing-ppt-16240131
2. http://nptel.ac.in/courses/106105033/41
3. https://www.youtube.com/watch?v=r8Lu_BjxlZc
4. http://video.mit.edu/watch/mitef-nyc-cloud-computing-8347/