

4/4 B.Tech. EIGHTH SEMESTER
ELECTIVE – V

EM8T4C

CLOUD COMPUTING

Credits: 3

Lecture: 3 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Course Objectives:

- Introducing the fundamental concepts and architecture of Cloud Computing .
- The concepts of Infrastructure as a Service (IaaS).
- The concepts of Platform-as-a-Service (PaaS).
- The concepts of Software as a Service (SaaS) .

Learning Outcome:

Upon the completion of this course, students will be able to

- Demonstrate the understanding of the fundamental concepts and architecture of Cloud Computing .
- Demonstrate the understanding of the concepts of Infrastructure as a Service (IaaS).
- Demonstrate the understanding of the concepts of Platform-as-a-Service (PaaS).
- Demonstrate the understanding of the concepts of Software as a Service (SaaS) .
- Demonstrate the understanding of MapReduce.

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.

Migrating into a Cloud: Introduction , Broad Approaches to Migrating into the Cloud , The Seven-Step Model of Migration into a Cloud.

UNIT:II

Enriching the ‘Integration as a Service’ Paradigm for the Cloud Era : An Introduction , The Onset of Knowledge Era , The Evolution of SaaS ,The Challenges of SaaS Paradigm , Approaching the SaaS Integration Enigma , New Integration Scenarios , The Integration Methodologies , SaaS Integration Products and Platforms, SaaS Integration Services , Businesses-to-Business Integration (B2Bi) Services, A Framework of Sensor—Cloud Integration [3] , SaaS Integration Appliances.

UNIT:III

The Enterprise Cloud Computing Paradigm: Introduction , Background , Issues for Enterprise Applications on the Cloud , Transition Challenges , Enterprise Cloud Technology and Market Evolution ,Business Drivers Toward a Marketplace for Enterprise Cloud Computing , The Cloud Supply Chain.

UNIT:IV

Virtual Machines Provisioning and Migration Services: Introduction and Inspiration, Background and Related Work , Virtual Machines Provisioning and Manageability , Virtual

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Machine Migration Services , VM Provisioning and Migration in Action , Provisioning in the Cloud Context.

UNIT :V

On the Management of Virtual Machines for Cloud Infrastructures:The Anatomy of Cloud infrastructures , Distributed Management of Virtual Infrastructures , Scheduling Techniques for Advance Reservation of Capacity , Capacity Management to meet SLA Commitments.

UNIT:VI

Enhancing Cloud Computing Environments Using a Cluster as a Service:Introduction , Related Work , RVWS Design , Cluster as a Service: The Logical Design.

UNIT:VII

Secure Distributed Data Storage in Cloud Computing:Introduction , Cloud Storage: from LANs TO WANs , Technologies for Data Security in Cloud Computing.

UNIT:VIII

Aneka—Integration of Private and Public Clouds: Introduction , Technologies and Tools for Cloud Computing , Aneka Cloud Platform , Aneka Resource Provisioning Service , Hybrid Cloud Implementation.

Text Books:

1. Rajkumar Buyya ,James Broberg ,Andrzej Goscinski CLOUD COMPUTING Principles and Paradigms, Wiley Publishing inc; 1 edition
2. Barrie Sosinsky Cloud Computing Bible ,wiley publishing inc 1 edition.

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.; For Dummies; 1 edition
3. Cloud Application Architecture- George Reese, O'Reilly Media; 1 edition
4. Haley Beard :Cloud computing best practices, second edition, Emereo Pty Ltd; 2 edition