CLOUD COMPUTING

(Professional Elective-V)/(Common to CSE & IT)

Course Code : 15CT1137

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Pre-requisites:

Computer Networks, Mobile Communications

Course Outcomes:

At the end of the Course, the Student will be able to:

CO 1 Summarize importance of cloud computing in real world.

CO 2 Identify applications that can be integrated using cloud services.

CO 3 Evaluate cloud based applications.

CO 4 Understand the security issues in cloud services.

CO 5 Identify the cloud services managing.

UNIT-I **(10 Lectures)**

INTRODUCTION:

Where Are We Today, What Is Cloud Computing, Cloud Deployment Models, Private vs. Public Clouds, Business Drivers for Cloud Computing, Introduction to Cloud Technologies

INFRASTRUCTURE AS A SERVICE:

Storage as a Service: Amazon Storage Services, Compute as a Service: Amazon Elastic Compute Cloud (EC2), HP CloudSystem Matrix, Cells-as-a-Service.

UNIT-II **(10 Lectures)**

PLATFORM AS A SERVICE:

Windows Azure, A “Hello World” Example, Example: Passing a

Message, Azure Test and Deployment, Technical Details of the Azure Platform, Azure Programming Model, Using Azure Cloud Storage Services, Handling the Cloud Challenges, Designing Pustak Portal in Azure, Google App Engine, Platform as a Service: Storage Aspects, Apache Hadoop, Mashups.

SOFTWARE AS A SERVICE:

CRM as a Service, Salesforce.com, Social Computing Services, Document Services: Google Docs.

UNIT-III (10 Lectures)

PARADIGMS FOR DEVELOPING CLOUD APPLICATIONS:

Scalable Data Storage Techniques, MapReduce Revisited, Rich Internet Applications

ADDRESSING THE CLOUD CHALLENGES:

Scaling Computation, Scale Out versus Scale Up, Amdahl's Law, Scaling Cloud Applications with a Reverse Proxy, Hybrid Cloud and Cloud Bursting: OpenNebula, Scaling Storage, CAP Theorem, Implementing Weak Consistency, Consistency in NoSQL Systems, Multi-Tenancy, Multi-Tenancy Levels, Tenants and Users, Authentication, Implementing Multi-Tenancy: Resource Sharing, Case Study: Multi-Tenancy in Salesforce.com, Multi-Tenancy and Security in Hadoop.

UNIT-IV (10 Lectures)

DESIGNING CLOUD SECURITY:

Cloud Security Requirements and Best Practices, Physical Security, Virtual Security, Risk Management, Risk Management Concepts, Risk Management Process, Security Design Patterns, Defense in Depth, Honeypots, Sandboxes, Network Patterns, Common Management Database, Example: Security Design for a PaaS System, Security Architecture Standards, SSE-CMM, Legal and Regulatory Issues, Selecting a Cloud Service Provider, Cloud Security Evaluation Frameworks.

UNIT-V (10 Lectures)

MANAGING THE CLOUD:

Managing IaaS, Managing PaaS, Managing SaaS, Other Cloud-Scale Management Systems,

RELATED TECHNOLOGIES:

Server Virtualization,Two Popular Hypervisors, Storage Virtualization, Grid Computing, Other Cloud-Related Technologies.

TEXT BOOK:

DinkarSitaram, GeethaManjunath, "Moving to the Cloud: Developing Apps in the New World of Cloud Computing", 1st Edition, Elsevier,2012

REFERENCES:

1. Barrie Sosinsky, "Cloud Computing Bible", 1st Edition,Wiley India Pvt Ltd, 2011.
2. Robert Elsenpeter, Toby J. Velte, Anthony T. Velte, "Cloud Computing: A Practical Approach", 1st Edition, TataMcGraw Hill Education, 2011.