Course Name: Introduction to Cloud Computing
Course Code:
Course Credit: 2-0-0
Course Objectives:

- To provide students with the fundamentals and essentials of Cloud Computing.
- To provide students a sound foundation of the Cloud computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios.
- To enable students exploring some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications.

Course Content:

Theory

Unit 1- Fundamentals of Cloud Computing: 6 Hours

Cloud Computing Basics – History of Cloud Computing, Characteristics of Cloud Computing, Need for Cloud computing, Advantages and Possible Disadvantages of cloud computing, Cloud Deployment Models – Public, Private, Hybrid, Community, Other deployment Models. Evolving Data Center into Private Cloud, Datacenter Components, Extracting Business value in Cloud Computing – Cloud Security, Cloud Scalability, Time to Market, Distribution over the Internet, Cloud Computing Case Studies.

Unit 2 - Cloud Delivery Models 6 Hours

Introduction to Cloud Services, Infrastructure as a Service (IaaS) – Overview, Virtualization, Container, Pricing Models, Service Level Agreements, Migrating to the Cloud, IaaS Networking options, Virtual Private Cloud(VPC), IaaS Storage – File and Object storage, Data Protection, IaaS security, Benefits, Risks and Examples of IaaS. Platform as a Service (PaaS) – Overview, IaaS vs PaaS, PaaS Examples, benefits and risks. Software as a Service (SaaS) – Introducing SaaS, SaaS Examples – Office 365, Google G Suite, Salesforce.com, Evaluating SaaS – user and vendor perspective, Impact of SaaS, Benefits and risks of SaaS. Other Services on Cloud, Cloud Delivery Models Considerations.

Unit 3 - Cloud Platforms 6 Hours

Introducing Cloud Platforms, Evaluating cloud platforms, Cloud Platform technologies – Amazon Web Services, Microsoft Azure, Google Cloud Platform, Salesforce.com, Impact of Cloud platforms. Private Cloud Platforms – Introducing Private clouds – Microsoft Azure stack, Open stack, AWS Greengrass, Impact of Private clouds

Unit 4 - Cloud Computing - Challenges, Risk and Mitigation 6 Hours

Cloud Storage, Application performance, Data Integration, Security. Ensuring Successful Cloud Adoption: Designing a Cloud Proof of Concept, Vendor roles and capabilities, moving to the Cloud. Impact of Cloud on IT Service Management.

Risks and Consequences of Cloud Computing – Legal Issues, Compliance Issues, Privacy and Security.

Unit 5: Managing the Cloud 6 Hours

Managing and Securing Cloud Services, Virtualization and the Cloud, Managing Desktops and devices on the cloud, SOA and Cloud computing, Managing the Cloud environment, Planning for

the Cloud – Economic Cost Model and Leveraging the Cloud, Cloud computing resources, Cloud Dos and Don'ts.

Course Outcomes:

- Analyze the Cloud computing setup with its vulnerabilities and applications using different architectures.
- Design different workflows according to requirements and apply map reduce programming model.
- Apply and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms
- Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds
- Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application
- Broadly educate to know the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.

Text Books:

1. Kirk Hausman, Susan L. Cook, Telmo Sampaio, " CLOUD ESSENTIALS CompTIA® Authorized Courseware for Exam CLO-001", John Wiley & Sons Inc., 2013.
2. Judith Hurwitz , Robin Bloor , Marcia Kaufman , Fern Halper, "Cloud Computing for Dummies", Wiley Publishing Inc., 2010.

References Books:

1. Erl," Cloud Computing: Concepts, Technology & Architecture", Pearson Education, 2014.
2. Srinivasan, "Cloud Computing: A Practical Approach for Learning and Implementation "Pearson Education, 2014.