

Devi Ahilya University, Indore, India Institute of Engineering & Technology				ME I Year Information Technology (Sp. Advance Cloud Computing) Semester - B			
Subject Code & Name	Instructions Hours per Week			Credits			
ISR2G1: Advance Cloud Computing	L	T	P	L	T	P	Total
Duration of Theory Paper: 3 Hours	3	1	0	3	1	0	4

Course Objective:

To study the latest Computing Technologies of Computer Science.

COURSE CONTENT

Unit 1: Introduction to Cloud Computing and Virtualization:

Computing era , Cloud evolution, Principles of parallel and distributed computing. Cloud Computing introduction, Vision, Characteristics as per NIST, need of cloud computing.

Virtualization-Benefits of Virtualization, Challenges in virtualization, characteristics of virtualized environments, Taxonomy of virtualization technique, components of virtualization, resource virtualization. Principles of virtualization platforms. virtual Servers, virtual Network, VDI.

Unit 2: Cloud Computing Architecture:

Cloud Computing Reference Model, Cloud architecture, Service Models (**XaaS**), Cloud deployment models, Cloud Adaptaion policy, Data centre Architecture with reference model.

Scalability and fault tolerance- Cloud migration, cloud migrating strategies, Risk Associated during cloud Migrating.

Unit 3: Security and legal issues in Cloud Computing:

Security issues in Cloud storage- Data in Rest, Data in Motion, Data in flight, Identity and access management, Authentication services in cloud. Data Sanitization In Cloud (Antiforensics)

Cloud threats- Threat actors in cloud, Current Threats in cloud, Mitigation techniques for Cloud threats, Cloud Contracting models, Methods for Data loss prevention.

Legal and Compliance Issues- Service level Agreement management. Cross Boarder Data Storage issue, Cloud Governace model, Business Continuity, Diasater recovery as a service model (**DRaaS**). Data retention and Backup policies.

Unit 4: Inter Cloud Computing/Federated Environment:

Federated Cloud- Characteristics, Cloud Federation Stack, Motivation for Cloud Interoperability, Cloud Interoperability Scenario, Challenges, Intercloud enabling techniques, Inter-Cloud Standards, Inter-Cloud Project examples.

Role of standards- HIPAA, SOX, PCIDSS, CloudSecurity Alliance, Ownership of data.

Unit 5: Cloud Platforms:

Case studies on Cloud Platforms - Amazon web services, Google App Engines, Microsoft Azure, Salesforce Cloud.

Business Cloud – Busines model in cloud Applications, Capex and Opex in computing, Business and Consumer applications. Energy efficiency in clouds.

Cloud Deployment- Setting up a small cloud , Cloud application development, Fog Computing, Big Data application on cloud, Cloud mining, Tool practice : Cloud-Sim.

Text and Reference books:

- 1) *Rajkumar Buyya; Cloud Computing Principles and Paradigms; John Wiley & Sons 2011.*
- 2) *Rajkumar Buyya; Mastering Cloud Computing; Elsevier Inc 2013.*
- 3) *Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010*
- 4) *Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach" McGraw-Hill Osborne Media; 1 edition [ISBN: 0071626948], 2009.*
- 5) *Dimitris N. Chorafas, "Cloud Computing Strategies" CRC Press; 1 edition [ISBN: 1439834539], 2010.*