Course Code: IT-35
Course Name: Cloud Computing

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Course Objectives:

1. To introduce the fundamentals of cloud computing, its technologies, Challenges and Applications
2. To give Insights into the virtualization technologies and Architecture
3. To know the relationship between Cloud and SOA
4. To classify and evaluate Cloud Security Issues
5. To apply theory to practical knowledge through case Studies

Course Outcomes:
Student will be able to
    CO1: Describe the concepts of Cloud Computing and its Service Models& Deployment Models.
       (Understand)
    CO2: Classify the types of Virtualization. (Understand)
    CO3: Describe the Cloud Management and relate Cloud to SOA. (Understand)
    CO4: Interpret Architecture and Pharrell Programing of Cloud Computing. (Apply)
    CO5: Demonstrate practical implementation of Cloud computing. (Apply)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions

1	1. Cloud Services and Cloud Models
	  1.1. Introduction to Cloud
	  1.2. Cloud Computing vs. Cluster Computing vs. Grid Computing
	  1.3. Introduction to Cloud Service Models
	  1.4. Characteristics, Advantages, Security
	  1.5. XAAS- Anything as a Service – Storage as a service, Network as a Service, Database as a Service etc.
	  1.6. IAAS, PAAS, SAAS characteristics, benefits and Applications
	  1.7. Comparison of SAAS, PASS and IAAS
	  1.8. Cloud Deployment Models-Public, Private, Hybrid
		20	7

	1.9. Cloud Platforms :		
	1.9.1. Google Cloud Platform,		
	1.9.2. Microsoft Azure		
	1.9.3. SalesForce,		
	1.9.4. AWS.		
	Extra Reading: Offerings of AWS		
2	2. Virtualization	15	8
	2.1. Introduction to Virtualization concept &Hypervisors		
	2.2. Types of Virtualization: Server, Storage and Network		
	2.3. Pros and Cons of Virtualization		
	2.4. Machine Image, Virtual Machine (VM)		
	2.5. Technology Examples		
	2.5.1. Xen: Para virtualization		
	2.5.2. VMware: Full Virtualization		
	2.5.3. Open Source Virtualization Manager		
3	3. SOA & Cloud Management	15	8
	3.1. Definition of Service Oriented Architecture		
	3.2. Basic concepts of SOA		
	3.3. Web Services: SOAP and REST		
	3.4. Cloud APIs (RESTful)		
	3.5. Relating SOA and Cloud Computing.		
	3.6. Cloud Availability		
	3.7. Cloud Governance		
	3.8. Service Level Agreement		
	Extra Reading: Pricing Model: Usage Reporting, billing and metering (AWS), Cloud Statistics		
4	4. Multi Core Architecture	15	6
	4.1. Cloud Computing Architecture		
	4.2. Multi Core Architecture		
	4.3. Multi Cloud Environment		
	4.4. Parallel Programming		
	4.5. Parallel Processing		
	4.6. Edge Computing Concepts		
5	5. Moving Applications to the Cloud	15	6
	5.1. Cloud Migration Strategies and Process		
	5.2. Issues in Inter Cloud		
	5.3. Applications in the Clouds		
	5.4. Cloud Service Attributes		
	5.5. Cloud Bursting.		
	5.6. Data Migration in Cloud		
	5.7. 5Quality of Services in cloud Computing		
	Extra Reading: Six R for Cloud Migration		

6	6. Cloud Security & Implementation of Cloud	20	10
	6.1. Cloud Security Fundamentals		
	6.2. Cloud Security Architecture		
	6.3. Cloud Computing Security Challenges		
	6.4. Privacy and Security in Cloud		
	6.5. Identity Management and Access control		
	6.6. Demonstrate the commercial cloud computing Infrastructures		
	6.7. Introduction to Dockers Container		
	6.8. Case Study's based on Cloud Computing Concepts.		
	Total:	100	45

List of Practicals (if any)

1. Create an Account to Cloud Service Provider (AWS, AZURE, Google Cloud, etc.)
2. Create an Instance on Cloud
3. Provide Access Control and Permission to Users
4. Execute the Web Page on Cloud
5. Provide Security Mechanism to your instance.

Course References:

Recommended Books:

Reference Books:

1. Cloud Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd,
2. Cloud Computing : Automating the Virtualized Data Center
3. Cloud Computing by Dr. Kumar Saurabh ,Wiley–India
4. Cloud computing: A practical approach by Anthony T. Velte, Tata McGraw-Hill
5. Cloud Computing Concepts, Technology & Architecture by Thomas Erl, Zaigham Mahmood, and Ricardo Puttin
6. Mastering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi - McGraw Hill Education (India) Private Limited,
7. Cloud Computing Web –Based Applications that change the way you work and Collaborate Online by Michael Miller, Pearson
8. Cloud Computing for Dummies by Judith Hurwitz, Robin Bloor, Marcia Kaufman, FernHalper

Web Reference:

1. http://www.cloudcomputingpatterns.org/
2. http://whatiscloud.com
3. www.w3schools.com