

SWE4002	Cloud Computing	L	T	P	J	C
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Pre-requisite	SWE3001	Syllabus version				
		v. 1.0				
Course Objectives:						
<ol style="list-style-type: none"> 1. To understand cloud services and deployment models 2. To use virtualization tools and mechanisms 3. To build private cloud environment. 						
Expected Outcome:						
<ol style="list-style-type: none"> 1. Understand cloud services and cloud deployment models 2. Use to test techniques and skills for cloud services 3. Propose suitable virtualization concept, cloud resource management and automation strategies 4. Build and experiment with global exchange of cloud resources 5. Make use of cloud storage systems and develop cloud applications 6. Design and evaluate cloud-based system process and component to meet desired cloud environment 7. Formulate the Policies for cloud security services 8. Summarize the adoption of Cloud environment in a given sector industry 						
Student Learning Outcomes (SLO)		6,2 ,17				
Module:1	Overview of Computing Paradigm	6 hours				
Recent trends in Computing- Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Web services, Introduction to Cloud Computing- NIST Cloud Computing Reference Architecture.						
Module:2	Cloud Models	5 hours				
Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud – Community, Hybrid Clouds						
Module:3	Basics of Virtualization	5 hours				
Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices – Virtual Clusters and Resource Management – Virtualization for Data-center automation.						
Module:4	Cloud Environments	4 hours				
Google App Engine, Amazon AWS, Azure - Open Source tools. Cloud Infrastructure- Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global exchange of cloud resources.						

Module:5		Security Overview	8 hours	
Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance - Risk Management. Security Monitoring -Security Architecture Design – Data Security – Application Security - Virtual Machine Security - Identity Management and Access Control – Autonomic Security				
Module:6		Contemporary issues: Applications of Cloud Computing in Industry.	2 hours	
		Total Lecture hours:	30 hours	
Text Book(s)				
1.	1. Anthony T Velte, Toby J. Velte, Robert Elsenpeter, “ Cloud computing A Practical Approach”, Tata McGrawHill Publication, First Edition, 2009.			
Reference Books				
1.	2. Tim Mather, Subra Kumaraswamy, Shahed Latif, “ Cloud Security and Privacy – An Enterprise Perspective on Risks and Compliance”, O’Reilly Publications, First Edition, 2009.			
2.	3. Akex Amies, Harm Sluiman, Qiang Guo Tang, Guo Ning Liu, “Developing and Hosting Applications on the Cloud”, IBM Press, 2012.			
3.	4. Judith Hurwitz , Bloor Robin, Marcia Kaufman & Fern Halper, “Cloud Computing for Dummies”, Wiley Publications, 2009.			
4.	5. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the cloud”, O’Reilly.			
Recommended by Board of Studies			12.06.2015	
Approved by Academic Council			No. 37	Date 16.06.2015