CLOUD COMPUTING

VII Semester: IT

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AIT007	Elective	3	1	3	4	30	70	100
Contact Classes: 65	Tutorial Classes: 10	Practical Classes: 51				Total Classes: 65		

COURSE OBJECTIVES:

The course should enable the students to:

I. Understand the concepts of cloud computing for developing the cloud applications
II. Understand task scheduling algorithms and virtualization
III. Analyze the security issues in cloud environments
IV. Gain knowledge in the broad perceptive of cloud architecture and model.
V. Analyze and understand the importance of various applications of cloud computing

COURSE OUTCOMES (COs):

CO 1: Jnderstand the concept of cloud computing and challenges.
CO 2: Determine the cloud models with applications.
CO 3: Analyze an ability to identify and evaluate the requirements of software product
CO 4: Understand the cloud resource management and scheduling
CO 5: Understand security issues and solve by clearing risks with security

COURSE LEARNING OUTCOMES (CLOs):

1. Define cloud computing and related concepts
2. Understand the key dimensions of the challenges of Cloud Computing
3. Understand the cloud services of Amazon, Google, Azure online services.
4. Develop the applications developments of Amazon web services
5. Understand the Cloud architecture and programming model
6. Describe the compute intensive model and date intensive model
7. Determine the map reducing in cloud
8. Describe the graph processing
9. Determine programming models of Pregl and other big data
10. Understanding the cloud resource virtualization
11. Describe the Emulation of CRV
12. Determine the application virtualization, applying virtualization
13. Understanding the Cloud Resource Management and Scheduling
14. Determine cloud scheduling subject to deadlines
15. Describe fairing
16. Understand the resource management and application scaling
17. Describe the Cloud Security i.e., Risks, Privacy and Privacy impacts assessments
18. Understand the Compliance issues
19. Determine the how standards deal with cloud services and virtualization
20. Describe compliance for the cloud provider vs compliance for the customer.

UNIT -I	**SYSTEM MODELING, CLUSTERING AND VIRTUALIZATION**	**Classes: 15**
Scalable computing over the Internet, Technologies for network-based systems, System models for distributed and cloud computing, Software environments for distributed systems and clouds Performance, security and energy efficiency		
UNIT -II	**VIRTUAL MACHINES AND VIRTUALIZATION OF CLUSTERS AND DATA CENTERS**	**Classes: 15**
Implementation levels of virtualization, Virtualization tools, structures and mechanisms, Virtualization of CPU, Memory and I/O devices, Virtual clusters and resource management, Virtualization for data center automation.		
UNIT -III	**CLOUD PLATFORM ARCHITECTURE**	**Classes: 15**
Cloud computing and service models, Architectural design of compute and storage clouds, Public cloud platforms, Inter-cloud resource management. Cloud security and trust management, Service oriented architecture (SOA), Message-oriented middleware.		
UNIT -IV	**CLOUD PROGRAMMING AND SOFTWARE ENVIRONMENTS**	**Classes: 15**
Features of Cloud and grid platforms, Parallel and distributed programming paradigms, Programming support of Google App Engine, Programming on Amazon AWS and MS Azure, Emerging cloud software environments.		
UNIT -V	**CLOUD RESOURCE MANAGEMENT AND SCHEDULING**	**Classes: 15**
Policies and mechanisms for resource management applications of control theory to task scheduling in a cloud, Stability of a two-level resource allocation architecture, Feedback controls based on dynamic thresholds, Coordination of specialized autonomic performance managers, Resource Bundling		

Text Books:

1.Cloud computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M.Goscinski,wiley,2011
2.Distributed and Cloud Computing, Kai Hwang, Geofferyu C.Fox, Jack J.dongarra, Elsevier, 2012
3. Distributed and Cloud Computing, Kai Hwang et al, Elsevier.
4. Cloud Computing, Theory and Practice, Dan Marinescu, Elsevier.
5. Cloud Computing, A Hands-On Approach, Arshadeep Bagra and Vijay Madisetti, University Press.

Reference Books:

1. Cloud Computing: A practical approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGrawHill,2011
2. Enterprise Cloud Computing, Gautam Shroff, Cambridge University press,2010
3. Cloud Computing: Implementation, Management and Security, John W. Ritting house, James F. Ransom, CRC press, rp2012
4. Cloud Applications Architectures: Building Applications and Infrastructure in the Cloud, George Reese, O Reilly, SPD, rp2011
5. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance,im Mather, Subra Kumaraswamy, Shahed Latif, O Reilly,SPD, rp2011