CLOUD APPLICATION DEVELOPMENT

Semester: VII								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
ACS011	Core	3	1	-	4	30	70	100
Contact Classes: 45	**Tutorial Classes: 15**	**Practical Classes: Nil**				**Total Classes: 60**		

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 LEARNINGOUTCOMES (CLOs):

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

UNIT-I	**INTRODUCTION AND CLOUD APPLICATION DEVELOPMENT**	**Classes: 08**

Introduction: Definition, Characteristics, Benefits, challenges of cloud computing, cloud models: serviceIaaS(infrastructure as service),PaaS(platform as a service),SaaS(software as a service), deployment models-public, private, hybrid, community; Types of cloud computing: Grid computing utility computing, cluster; computing Cloud services: Amazon, Google, Azure, online services, open source private clouds, SLA; Applications of cloud computing: Healthcare, energy systems, transportation, manufacturing, education, government, mobile communication, application development

UNIT-II	**CLOUD ARCHITECTURE, PROGRAMMING MODEL**	**Classes: 09**

Cloud Architecture, programming model: NIST reference architecture, architectural styles of cloud applications, single, multi, hybrid cloud site, redundant, non redundant, 3 tier, multi tier architectures; Programming model: Compute and data intensive.

UNIT-III	**CLOUD RESOURCE VIRTUALIZATION**	**Classes: 09**

Cloud resource virtualization: Basics of virtualization, types of virtualization techniques, merits and demerits of virtualization, Full vs Para - virtualization, virtual machine monitor/hypervisor.

Virtual machine basics, taxonomy of virtual machines, process vs system virtual machines.		
UNIT-IV	**CLOUD RESOURCE MANAGEMENT AND SCHEDULING**	**Classes: 10**
Cloud Resource Management and Scheduling: Policies and mechanisms for resource management, resource bundling, combinatorial , fair queuing, start time fair queuing, borrowed virtual time, cloud scheduling subject to deadlines, scheduling map reduce applications subject to deadlines, resource management and application scaling.		
UNIT-V	**CLOUD SECURITY**	**Classes: 09**
Cloud Security: Risks, privacy and privacy impacts assessments; Multi-tenancy issues, security in VM, OS, virtualization system security issues and vulnerabilities; Virtualization system-specific attacks: Technologies for virtualization-based security enhancement, legal.		
Text Books:		
1. Dan Marinescu, "Cloud Computing: Theory and Practice‖", M K Publishers, 1st Edition, 2013, 2. Kai Hwang, Jack Dongarra, Geoffrey Fox," Distributed and Cloud Computing, From Parallel Processing to the Internet of Things‖", M K Publishers, 1st Edition, 2011.		
Reference Books:		
1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud Computing: A Practical Approach", McGraw Hill, 1st Edition, 2009. 2. Arshdeep Bahga, "Cloud Computing: A Hands on Approach", Vijay Madisetti Universities Publications, 1 st Edition, 2013.		
Web References:		
1. https://www.oracle.com/in/cloud/application-development 2. http://computingcareers.acm.org/?page_id=12 3. http://en.wikibooks.org/wiki/cloud application		
E-Text Books:		
1. http://www.acadmix.com/eBooks_Download 2. http://www.ibm.com		