COURSE CONTENT

CLOUD COMPUTING

VII Semester: IT

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AITC25	**Core**	3	0	0	3	30	70	100
Contact Classes: 45	**Tutorial Classes: Nil**	**Practical Classes: Nil**				**Total Classes: 45**		

Prerequisite: There is no prerequisite to take this course

I.COURSE OVERVIEW:
This course covers the topics of cloud infrastructures, cloud service providers, virtualization, software-defined networks and storage, cloud storage, cloud resource scheduling and management, programming models, and cloud security.

II. COURSE OBJECTIVES:
The students will try to learn:
I. Apply cloud computing concepts for developing data center and deploy cloud applications that are resilient, elastic, and cost-efficient.
II. Summarize Virtual Machine concepts for running different applications on different operating systems concurrently.
III. Determine resource scheduling and management methods for finding the best match of combined resources as per user require men

III. COURSE SYLLABUS:
MODULE-I: INTRODUCTION AND CLOUD APPLICATIONDEVELOPMENT (08)
Introduction: Definition, Characteristics, Benefits, challenges of cloud computing, cloud models: service IaaS (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: Health care, energy systems, transportation, manufacturing, education, government, mobile communication, application development.

MODULE –II: CLOUD ARCHITECTURE, PROGRAMMING MODEL (09)
Cloud Architecture, programming model: NIST reference architecture, architectural styles of cloud applications, single, multi, hybrid cloud site, redundant, nonredundant, 3tier, multitier architectures;
Programming model: Compute and data intensive.

MODULE –III: CLOUD RESOURCE VIRTUALIZATION (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.

MODULE –IV: CLOUD RESOURCE MANAGEMENT AND SCHEDULING (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.

MODULE –V: CLOUD SECURITY (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..

IV. TEXT BOOKS:
1. DanMarinescu, "Cloud Computing:Theory and Practice", MK Publishers,1st Edition,2013,
2. Kai Hwang, Jack Dongarra, Geoffrey Fox, "Distributed and Cloud Computing from Parallel Processing to the Internet of Things", MK Publishers, 1st Edition, 2011.

V. REFERENCE BOOKS:
1. AnthonyT.Velte,TobyJ.Velte, Robert Elsenpeter, "Cloud Computing: A Practical Approach", McGraw Hill, 1st Edition,2009.
2. ArshdeepBahga, "Cloud Computing: A Hands on Approach", Vijay Madisetti Universities Publications, 1st Edition, 2013.

VI. WEB REFERENCES:
3. https://www.oracle.com/in/cloud/application-development
4. http://computingcareers.acm.org/?page_id=12
3. http://en.wikibooks.org/wiki/cloudapplication