INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

CLOUD APPLICATION DEVELOPMENT

VII SEMESTER: CSE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
ACSC30	**Core**	3	1	0	4	30	70	100

Contact Classes: 45	Tutorials Classes: 15	Practical Classes: Nil	Total Classes: 60

Prerequisite: There are no prerequisites to take this course

I.COURSE OVERVIEW:

This course focuses on cloud API development. Those represent the two major components of the class: cloud based computing and API development. Cloud computing is basically computing that is done on distributed computers all over the world. Web API development involved creating applications that internet connected devices can interact with to accomplish certain tasks. The combination will mean that we are creating applications on cloud based computers which we can interact with over the internet. 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. The fundamental knowledge of statement notations and logical connectives which are used to convert English sentences into logical expressions.
- II. The effective use of combinatory principles for calculating probabilities and solving counting problems
- III. The characteristics of generating functions for finding the solution of linear homogeneous recurrence relations.
- IV. The effective use of graph theory in subsequent fields of study such as computer networks, and algorithms for solving real world engineering problems.

III.   COURSE SYLLABUS

MODULE –I: INTRODUCTION AND CLOUD APPLICATION DEVELOPMENT (09)

Introduction: Definition, Characteristics, Benefits, challenges of cloud computing, cloud models: 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: Healthcare, 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, non redundant, 3 tier, multi tier 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 (09)

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. 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.

V. REFERENCE BOOKS:

1. Anthony T. Velte, Toby J. 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:

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

VII. E-TEXTBOOKS:

1. https://eclass.uoa.gr/modules/document/file.php/D416/CloudComputingTheoryAndPractice.pdf.