

## CLOUD COMPUTING AND APPLICATIONS

Semester II (Computer Engineering)

SUB CODE: MECE203

### Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
04	00	02	06	05	3	70	30	20	30	150

### LEARNING OBJECTIVES:

The objective of this course is

- To Introduce cloud computing technology
- Study about various cloud platforms
- Understanding cloud architecture
- Understanding cloud services and applications
- Study about cloud security
- To establish public, private and hybrid cloud for own organization

### OUTLINE OF THE COURSE:

Unit No	Topics
1	Introduction Cloud Computing and Cloud Architecture
2	Cloud Service Models
3	Cloud Abstraction and Virtualization
4	Exploring Platform as a service and Google Web Services
5	Security in Cloud
6	Cloud Applications and Cloud based storage

**Total hours (Theory): 60**

**Total hours (Practical): 30**

**Total hours: 90**

**DETAILED SYLLABUS:**

<b>Sr. No</b>	<b>Topic</b>	<b>Lecture Hours</b>	<b>Weight age (%)</b>
1	<b>Introduction Cloud Computing and Cloud Architecture:</b> <ul style="list-style-type: none"><li>• Defining Cloud Computing</li><li>• Cloud Types</li><li>• Examining the Characteristics of Cloud Computing</li><li>• Exploring the Cloud Computing Stack</li><li>• Connecting to the Cloud</li><li>• Service Oriented Architecture and the Cloud</li></ul>	12	20
2	<b>Cloud Service Models:</b> <ul style="list-style-type: none"><li>• Defining Infrastructure as a Service (IaaS)</li><li>• Defining Platform as a Service (PaaS)</li><li>• Defining Software as a Service (SaaS)</li><li>• Defining Identity as a Service (DaaS)</li><li>• Defining Compliance as a Service (CaaS)</li></ul>	8	15
3	<b>Cloud Abstraction and Virtualization:</b> <ul style="list-style-type: none"><li>• Using Virtualization Technologies</li><li>• Load Balancing and Virtualization</li><li>• Understanding Hypervisors</li><li>• Understanding Machine Imaging</li><li>• Porting Applications</li></ul>	8	15
4	<b>Exploring Platform as a Service and Google Web Services:</b> <ul style="list-style-type: none"><li>• Defining Services</li><li>• Using PaaS Application Frameworks</li><li>• Exploring Google Applications</li><li>• Surveying the Google Application Portfolio</li><li>• Exploring the Google Toolkit</li></ul>	12	20
5	<b>Security in Cloud:</b> <ul style="list-style-type: none"><li>• Securing the Cloud</li><li>• Securing Data</li><li>• Establishing Identity and Presence</li></ul>	08	10
6	<b>Cloud Applications and Cloud Based Storage</b> <ul style="list-style-type: none"><li>• Applications in the Cloud</li><li>• Applications and Cloud APIs</li><li>• Measuring the Digital Universe</li><li>• Provisioning Cloud Storage</li><li>• Exploring Cloud backup Solutions</li><li>• Cloud Storage Interoperability</li><li>• Governing the Cloud</li></ul>	12	20

## **INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)**

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

### **STUDENTS LEARNING OUTCOMES:**

On successful completion of the course, the student will:

- On successful completion of the course, the student will be having the basic knowledge of Cloud Computing.
- Student will be able to understand cloud service and deployment models.
- Student will be able to deploy private cloud.
- To know about cloud applications.

### **REFERENCE BOOKS:**

1. Cloud Computing Bible , Barrie Sosinsky
2. Cloud Computing for Dummies by Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper, Wiley India
3. Cloud Computing : A Practical Approach, Antohy T Velte, et.al McGraw Hill
4. Enterprise Cloud Computing by Gautam Shroff, Cambridge
5. Cloud Security by Ronald Krutz and Russell Dean Vines, Wiley-India

### **REFERENCE LINKS AND E-CONTENT:**

1. <http://www.cloudbus.org/>
2. <http://www.xen.org/products/cloudxen.html>
3. <http://www.ubuntu.com/cloud>
4. <http://opennebula.org>
5. <http://haizea.cs.uchicago.edu/>
6. <http://www.computer.org/portal/web/cloudcomputing>
7. [http://www.manjrasoft.com/manjrasoft\\_downloads.html](http://www.manjrasoft.com/manjrasoft_downloads.html)
8. <http://www.journalofcloudcomputing.com/content>

**LIST OF PRACTICALS:**

<b>Sr. No</b>	<b>Name of Experiment</b>
1	To setup Ubuntu Enterprise Cloud
2	To setup Open Nebula
3	To setup XCP server (XEN host and XEN client)
4	To setup Aneka Cloud Toolkit
5	To setup CloudSim Toolkit
6	Run sample program on CloudSim Toolkit
7	Develop a Sample Apps using Google App Engine