# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

## COURSE PLAN – PART I

| Course Title | CLOUD COMPUTING | | |
|---|---|---|---|
| Course Code | CS626 | No. of Credits | 3 |
| Course Code of Pre-requisite subject(s) | NIL | | |
| Session | Jan 2018 | Section (if, applicable) | ---- |
| Name of Faculty | Dr. S. Mary Saira Bhanu | Department | CSE |
| Email | msb@nitt.edu | Telephone No. | 9442970006 |
| Name of Course Coordinator(s) (if, applicable) | NA | | |
| E-mail | ---- | Telephone No. | ----- |
| Course Type | Elective course | | |

## Syllabus (approved in BoS)

2013

## COURSE OBJECTIVES

1. To define Cloud Computing and provide an in-depth and comprehensive knowledge of the Cloud Computing fundamental issues, technologies, applications, and Implementations.
2. To get exposed to the frontier areas of Cloud Computing, programming, and experiment with various cloud computing environments
3. To shed light on the Security issues in Cloud Computing
4. To introduce about the Cloud Standards

## COURSE OUTCOMES (CO)

| Course Outcomes | Aligned Programme Outcomes (PO) |
|---|---|
| 1. Ability to develop services for cloud using virtualization concepts | PO 1-PO7, PO9-PO11 |
| 2. Ability to apply various service models for cloud applications. | PO 1-PO7, PO9-PO11 |
| 3. Ability to develop cloud computing security solutions | PO 1-PO7, PO9-PO11 |

## COURSE PLAN – PART II

### COURSE OVERVIEW

This course enables the students to know the importance of Cloud Computing and understand how the various service models are implemented. The course focuses on the virtualization concepts, various types and role of virtualization in Cloud. The concepts related to Cloud programming and software environments enable the students to work on Cloud environments. The course deals with the security aspects of cloud.

### COURSE TEACHING AND LEARNING ACTIVITIES

| S.No. | Week | Topic | Mode of Delivery |
|-------|------|-------|------------------|
| 1 | 1 | History of Centralized and Distributed Systems, parallel and Distributed Computing – HPC and HTC, Computing Paradigms | Chalk and Talk , PPT |
| 2 | 2 | Overview of Distributed systems, Cluster Computing, Grid Computing | Chalk and Talk , PPT |
| 3 | 3 | Software Environments for Distributed Systems and Clouds, Web Service Architecture, Basic standards for web services | Chalk and Talk , PPT |
| 4 | 4 | Cloud Computing – Definition – Characteristics- Service models and deployment models | Chalk and Talk , PPT |
| 5 | 5 | Virtualization – Architecture and implementation Layers of a computer system - Virtual Machines features – VM types – Introduction to Virtual Machine Monitor – VMM types – Para and Full | Chalk and Talk , PPT |
| 6 | 6 | Hypervisors – Building blocks – Trap and Emulate, Binary Translation | Chalk and Talk , PPT |
| 7 | 7 | Infrastructure as a Service – Features, Building blocks, IaaS solutions, Platform as a Service – features, Platform idea and components – Application development | Chalk and Talk , PPT |
| 8 | 8 | Software as a Service – features – Characteristics, delivery models | Chalk and Talk , PPT |

| 9 | 9 | Service management, Service composition Orchestration Provisioning | Chalk and Talk , PPT |
|---|---|---|---|
| 10 | 10 | Parallel and distributed programming models, Hadoop and Map Reduce | Chalk and Talk , PPT |
| 11 | 11 | Amazon Web services – Google App Engine | Chalk and Talk , PPT |
| 12 | 12 | Windows Azure, Overview of Xen, Open Stack and Eucalyptus | Chalk and Talk , PPT |
| 13 | 13 | Cloud security, Security issues, threat models , Infrastructure Security | Chalk and Talk , PPT |
| 14 | 14 | Identity Access and Management , Security Management, Availability Management, Access control, Privacy, Auditing | Chalk and Talk , PPT |

**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

| S.No. | Mode of Assessment | Week/Date | Duration | % Weightage |
|---|---|---|---|---|
| 1 | Written Test | Feb III week | One hour | 20 |
| 2 | Written Assignment | March II week | | 10 |
| 3 | Written Test | March IV week | One Hour | 20 |
| CPA | Compensation Assessment* | 16.04.2018 | One hour | 20 |
| 4 | Final Assessment * | April IV week | Three hours | 50 |

*mandatory; refer to guidelines on page 4

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

Feedback to be collected at the end of the semester

**COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)**

MODE OF CORRESPONDENCE (email/ phone etc)

**Through email**

## ATTENDANCE

Students having 75% - 100% attendance are eligible for writing the End semester examination. Students having attendance between 65 % and 75% with valid reasons (Medical reasons, on duty) can write the end semester exam after attending extra classes. Students having less than 65 % attendance have to redo the course.

## COMPENSATION ASSESSMENT

Students should not absent for assessments. If the reason for absence is genuine, the student can appear for compensation assessment. The medical certificate/on duty certificate should be submitted within one week after rejoining. The portions for the compensation assessment will be Assessment 1 and Assessment 3 portions.
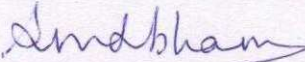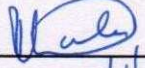
## ACADEMIC HONESTY & PLAGIARISM

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## ADDITIONAL INFORMATION

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## FOR APPROVAL

Course Faculty _____     CC-Chairperson _S. Selvakumar_ HOD
31 01 18                       31/1 2018

## Guidelines:

a) The number of assessments for a course shall range from 4 to 6.

b) **Every course shall have a final assessment on the entire syllabus with at least 30% weightage.**

c) **One compensation assessment for absentees in assessments (other than final assessment) is mandatory. This is not applicable for project work/industrial lectures/internship.**

d) The policy for attendance for the course should be clearly specified.

e) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.