

COURSE CODE	COURSE TITLE	L	T	P	C
1151IT118	Cloud Computing	3	0	0	3

Course Category: Program Core

a.Preamble

It aims to provide technology-oriented students with the knowledge and ability to develop creative solutions, and better understand the effects of future developments of mobile applications and its technology.

b. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1151IT108	Computer Networks
2	1151IT104	Object Oriented Programming

c. Related Courses:

Sl. No	Course Code	Course Name
1	1152IT120	Distributed Computing
2	1152IT119	Parallel Computing

d. Course Outcomes :

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing	K2
CO2	Apply suitable virtualization concept	K3
CO3	Discover the core issues of cloud computing such as security, privacy and interoperability	K3
CO4	Identify the architecture, infrastructure and delivery models of cloud computing	K2
CO5	Ability to choose the appropriate technologies, algorithms and approaches for the related issues.	K3

e. **Correlation of COs with POs :**

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M		L		L							
CO2	M		L		M							
CO3	M		M		M							
CO4	M				M							
CO5	M				M							

- H- High; M-Medium; L-Low

f. **Course Content :**

UNIT I INTRODUCTION 9

Evolution of Cloud Computing –System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture -IaaS – On-demand Provisioning – Elasticity in Cloud – E.g. of IaaS Providers - PaaS – E.g. of PaaS Providers - SaaS – E.g. of SaaS Providers – Public Private and Hybrid Clouds.

UNIT II VIRTUALIZATION 9

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Desktop Virtualization – Server Virtualization.

UNIT III CLOUD INFRASTRUCTURE 9

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT IV PROGRAMMING MODEL 9

Parallel and Distributed Programming Paradigms – Map Reduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, OpenStack

UNIT V SECURITY IN THE CLOUD 9

Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security.

h. Learning Resources

i. TEXTBOOK

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.

ii. REFERENCES

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.

2. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.

3. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”,
TMH, 2009.

iii. Online Resources

1. http://en.wikipedia.org/wiki/Cloud_computing
2. <http://en.wikipedia.org/wiki/Virtualization>
3. <https://technet.microsoft.com/en-us/magazine/hh509051.aspx>
4. <http://www.porticor.com/2009/08/cloud-computing-programming-models-part-1-of-4/>
5. http://en.wikipedia.org/wiki/Cloud_computing_security

