

COURSE CODE	COURSE TITLE	L	T	P	C
1152IT112	VIRTUALIZATION TECHNIQUES	3	0	0	3

Course Category:

~~Foundation (0) / Program Core (1) / Program Elective (2) / Allied Elective (3) / University Elective (4) / Value Education Elective (5) / Independent Learning (6) / Industry – Higher Learning Institute Interaction (7).~~

a.Preamble

It aims to create a [virtual](#) version of a [device](#) or resource, such as a [server](#), [storage device](#), [network](#) or even an [operating system](#) where the framework divides the resource into one or more [execution](#) environments. Even something as simple as partitioning a hard drive is considered virtualization because you take one drive and [partition](#) it to create two separate hard drives. Devices, applications and human users are able to interact with the virtual resource as if it were a real single [logical](#) resource.

b.Prerequisite Courses:

CLOUD COMPUTING

c.Related Courses:

DISTRIBUTED COMPUTING
GRID COMPUTING

d.Course Educational Objectives :

Students undergoing this course are expected to

- Understand the need of virtualization
- Explore the types of virtualization
- Understand the concepts of virtualization and virtual machines
- Understand the practical virtualization solutions and enterprise solutions
- Understand the security issues in cloud computing

e.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	Deploy legacy OSs on virtual machines	K2

CO2	Understand the intricacies of server, storage, network, desktop and application virtualizations	K3
CO3	Design new models for virtualization	K3
CO4	Design and develop cloud applications on virtual machine platforms	K2
CO5	Design new models for Bigdata processing in cloud	K3

f. 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

g. Course Content :

UNIT- I INTRODUCTION TO VIRTUALIZATION : Basics of Virtualization – Virtualization Types – Model of Virtualization – Layers of Virtualization – Server Machine Virtualization - Application Virtualization – Goals of Virtualization – Taxonomy of Virtual Machines.

UNIT - II VIRTUALIZATION INFRASTRUCTURE: Hardware Virtualization- Virtual Hardware Overview – Virtual Machine Products - Server Consolidation – Server Pooling - Types of Server Virtualization – Business cases for Server-Virtualization –Selecting server Virtualization Platform

UNIT - III NETWORK VIRTUALIZATION : Virtual File Systems – Process Virtualization – Layers in Virtualization – Players in Virtualization - Virtualizing the Campus WAN Design – - Routing Protocols- Virtualization Aware Routing - Multi-Topology Routing – Case Studies of Network Virtualization.

UNIT - IV DESKTOP VIRTUALIZATION AND STORAGE VIRTUALIZATION : Desktop Virtualization- Preparing a Virtualization Machine Host- Storage Virtualization - iSCSI Architecture – Securing iSCSI – SAN backup and recovery techniques – RAID – SNIA Shared Storage Model – Classical Storage Model – Virtual Information Systems.

UNIT – V SECURITY : Secure Virtual Infrastructure- Protect Virtual Infrastructure-Prepare Business Continuity -Update Management Structure

h.Learning Resources

i.Textbook :

1. Dan Kusnetzky ,”**Virtualization: A Manager’s Guide**”, O’Reily,2011

ii. Reference Books

1. Danielle Ruest, Nelson Ruest, ” **Virtualization: A Beginner’s Guide**”,McGraw Hill, 2009
2. Chris Wolf, Erick M. Halter ,”**Virtualization: From Desktop to the Enterprise**”, A Press, 2006

iii. Online Resources

- 1.<http://www.ss.pku.edu.cn/vs/style/resources/Introduction%20to%20Virtualization.pdf>
2. <http://www.vmware.com/in/virtualization>
- 3.<http://bradhedlund.com/2013/01/28/network-virtualization-a-next-generation-modular-platform-for-the-virtual-network/>
- 4.http://en.wikipedia.org/wiki/Desktop_virtualization
- 5.<http://www.vmware.com/files/pdf/cloud/vmware-cloud-solution-security-in-the-cloud-wp-en.pdf>