SCHEME OF COURSE WORK

Course Details:

Course Title	**: Information Storage Systems**		
Course Code	**: 15CT1128**	**L T P C**	**: 3 0 0 3**
Program:	**: B.Tech.**		
Specialization:	**: Information Technology**		
Semester	**: VI**		
Prerequisites	**: Computer Network & DBMS**		
Courses to which it is a prerequisite	**: Cloud Computing**		

Course Outcomes (COs):

1	Determine storage requirements for a data center.
2	Compute disk performance of storage arrays.
3	Design storage solutions based on application needs.
4	Apply storage connectivity technologies.
5	Differentiate network-attached and object-based storage.

Course Outcome Versus **Program Outcomes:**

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO-1	M	S		S								
CO-2		S			M							
CO-3		S				S						
CO-4		M		M	S							
CO-5		M		M	S							

S - Strongly correlated, *M* - *Moderately* correlated, *Blank* - *No correlation*

Assessment Methods:	Assignment /Quiz/ Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	**Sample questions**	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Information Storage, Evolution of Storage Architecture,	CO1	1. Describe storage architecture. 2. Explain about virtualization.	▫ Lecture ▫ PPT	
2	Data Center Infrastructure, Virtualization , Cloud Computing	CO1		▫ Lecture ▫ PPT	
3	Application,DBMS,Compute,Connectivity,Storage, Disk Drive Components, Disk Drive Performance	CO2	1. What is the need of Direct-Attached storage. 2. Explain about the performance of disk drives.	▫ Lecture ▫ Discussion	Assignment (Week 4 - 6) Mid-Test 1& Quiz-1 (Week 9)
4	Host Access to Data, Direct-Attached Storage , Storage Design Based on Application Requirements	CO2		▫ Lecture ▫ Discussion	

5	Disk Performance, Disk Native Command Queuing	CO2		▫ Lecture ▫ PPT	
6	Introduction to Flash Drives Concept in Practice: VMware ESXi.	CO2		▫ Lecture ▫ PPT ▫ Discussion	
7	RAID Implementation Methods , RAID Array Components, RAID Techniques	CO3	1. Explain RAID Levels.	▫ Lecture ▫ PPT ▫ Discussion	Mid-Test 1 & Quiz-1 (Week 9)
8	RAID Levels , RAID Impact on Disk Performance, RAID Comparison, Hot Spares	CO3		▫ Lecture ▫ PPT	
9	**Mid-Test 1 & Quiz-1**				
10	Components of an Intelligent Storage System, Storage Provisioning, Types of Intelligent Storage Systems	CO3	1. Describe EMC Symmetric system.	▫ Lecture ▫ PPT	
11	Concepts in Practice: EMC Symmetric and VNX.	CO3		▫ Lecture ▫ PPT	
12	Fibre Channel: Overview, The SAN and Its Evolution, Components of FC SAN , FC Connectivity, Switched Fabric Ports, Fibre Channel Architecture, Fabric Services	CO4	1. Explain SAN. 2. Explain FCIP.	▫ Lecture ▫ PPT	
13	Switched Fabric Login Types, Zoning, FC SAN Topologies, Virtualization in SAN, Concepts in Practice: EMC Connectrix and EMC VPLEX .	CO4		▫ Lecture ▫ PPT	Assignment (Week 14 - 16)
14	IP SAN and FCoE : FCIP, FCoE.	CO4		▫ Lecture ▫ PPT	Mid-Test 2 & Quiz-2 (Week 18)
15	General-Purpose Servers versus NAS Devices, Benefits of NAS, File Systems and Network File Sharing, Components of NAS, NAS I/O Operation, NAS Implementations, NAS File-Sharing Protocols	CO5	1. Explain about NAS. 2. Describe about EMC Centera System.	▫ Lecture ▫ PPT	Mid-Test 2 & Quiz-2 (Week 18)
16	Affecting NAS Performance, File-Level Virtualization, Concepts in Practice: EMC Isilon and EMC VNX Gateway.	CO5		▫ Lecture ▫ Discussion	
17	Object-Based Storage Devices, Content-Addressed Storage, CAS Use Cases, Unified Storage, Concepts in Practice: EMC Atoms, EMC VNX, and EMC Centera.	CO5		▫ Lecture ▫ Discussion	
18	Mid-Test 2 & Quiz-2				
19/20	END EXAM				