SCHEME OF COURSE WORK

Course Details:

Course Title	**: Information Storage Security and Management**			
Course Code	**: 13CT1134**	**L T P C**		**: 4 0 0 3**
Program:	**: B.Tech.**			
Specialization:	**: Computer Science & Engineering**			
Semester	**: VII**			
Prerequisites	**: Information Storage Systems**			
Courses to which it is a prerequisite	**: Cloud Computing**			

Course Outcomes (COs):

1	Design Business continuity plan
2	Select a local replication technology to provide data backup
3	Distinguish different remote replication technologies
4	Discuss security issues and mitigate them
5	Select appropriate storage management software

Program Outcomes (POs):

1	Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals and principles of Computer Science & Engineering to solve complex problems in different domains.
2	Graduates can identify, formulate, study contemporary domain literature and analyze real life problems and make effective conclusions using the basic principles of science and engineering.
3	Graduates will be in a position to design solutions for Engineering problems requiring in depth knowledge of Computer Science and design system components and processes as per standards with emphasis on privacy, security, public health and safety.
4	Graduates will be able to conduct experiments, perform analysis and interpret data as per the prevailing research methods and to provide valid conclusions.
5	Graduates will be able to select and apply appropriate techniques and use modern software design and development tools. They will be able to predict and model complex engineering activities with the awareness of the practical limitations.
6	Graduates will be able to carry out their professional practice in Computer Science & Engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
7	Graduates would understand the impact of the professional engineering solutions on environmental safety and legal issues.
8	Graduates will transform into responsible citizens by adhering to professional ethics.

9	Graduates will be able to function effectively in a large team of multidisciplinary streams consisting of persons of diverse cultures without forgetting the significance of each individual's contribution.
10	Graduates will be able to communicate effectively about complex engineering activities with the engineering community as well as the general society, and will be able to prepare reports.
11	Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
12	Graduates will engage themselves in self and life-long learning in the context of rapid technological changes happening in Computer Science and other domains.

Course Outcome Versus **Program Outcomes:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1			S		M					M		
CO-2		M			S	S						
CO-3		M			S	S						
CO-4		M	S									
CO-5		M	S									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	INTRODUCTION TO BUSINESS CONTINUITY: Information Availability, BC Terminology, BC Planning Life Cycle, Failure Analysis, Business Impact Analysis,	CO1	1. Describe various planned and unplanned occurrences of information unavailability in the context of data center operations. 2. Explain various backup and restore operations.	▫ Lecture ▫ PPT	
2	BC Technology Solutions, Concept in Practice: EMC PowerPath.BACKUP AND ARCHIVE: Backup Purpose	CO1		▫ Lecture ▫ PPT	Assignment (Week 4 - 6)
3	Backup Considerations, Backup Granularity, Recovery Considerations, Backup Methods, Backup Architecture, Backup and Restore Operations Backup Topologies	CO2	1. List and explain the considerations in using tape as the backup technology. What are the challenges in this environment? 2. Describe the benefits of using a virtual tape library over a physical tape library.	▫ Lecture ▫ Discussion	Mid-Test 1& Quiz-1 (Week 9)
4	Backup in NAS Environments, Backup Targets, Data De duplication for Backup, Backup in Virtualized Environments, Data Archive, Archiving Solution Architecture, Concepts in Practice: EMC NetWorker, EMC Avamar, and EMC Data Domain.	CO2		▫ Lecture ▫ Discussion	

5	LOCAL REPLICATION: Replication Terminology, Uses of Local Replicas, Replica Consistency, Local Replication Technologies , Tracking Changes to Source and Replica, Restore and Restart Considerations, Creating Multiple Replicas	CO2	1. Describe the uses of a local replica in various business operations. 2. Describe about continuous data protection technology and its benefits over array-based replication technologies.	▫ Lecture ▫ PPT	
6	Local Replication in a Virtualized Environment, Concepts in Practice: EMC TimeFinder, EMC SnapView, and EMC RecoverPoint.	CO2		▫ Lecture ▫ PPT ▫ Discussion	Mid-Test 1 & Quiz-1 (Week 9)
7	REMOTE REPLICATION: Modes of Remote Replication, Remote Replication Technologies, Three- Site Replication, Data Migration Solutions,	CO3	1. What are the considerations for implementing synchronous remote replication?	▫ Lecture ▫ PPT ▫ Discussion	
8	Remote Replication and Migration in a Virtualized Environment, Concepts in Practice: EMC SRDF, EMC MirrorView, and EMC Recover Point.	CO3		▫ Lecture ▫ PPT	
9	**Mid-Test 1 & Quiz-1**				
10	CLOUD COMPUTING: Cloud Enabling Technologies , Characteristics of Cloud Computing, Benefits of Cloud Computing	CO4	1. How does cloud computing bring in business agility?	▫ Lecture ▫ PPT	
11	Cloud Service Models, Cloud Deployment Models, Cloud Computing Infrastructure, Cloud Challenges, Cloud Adoption Considerations, Concepts in Practice: Vblock.	CO4		▫ Lecture ▫ PPT	Assignment (Week 14 - 16) Mid-Test 2 & Quiz-2 (Week 18)
12	SECURING THE STORAGE INFRASTRUCTURE: Information Security Framework, Risk Triad, Storage Security Domains	CO5	1. Explain various security concerns and measures in the virtualized and cloud environment. 2. Describe management of cloud infrastructure and services. 3. Research storage multitenancy and its advantages and disadvantages	▫ Lecture ▫ PPT	
13	Security Implementations in Storage Networking, Securing Storage Infrastructure in Virtualized and Cloud Environments, Concepts in Practice: RSA and VMware Security Products.	CO5		▫ Lecture ▫ PPT	
14	MANAGING THE STORAGE INFRASTRUCTURE: Monitoring the Storage Infrastructure	CO5		▫ Lecture ▫ PPT	
15	Storage Infrastructure Management Activities, Storage Management Need	CO5		▫ Lecture ▫ PPT	
16	Storage Infrastructure Management Challenges, Developing an Ideal Solution	CO5		▫ Lecture ▫ Discussion	
17	Lifecycle Management, Storage Tiering, Concepts in Practice: EMC Infrastructure Management Tools.	CO5		▫ Lecture ▫ Discussion	Mid-Test 2 & Quiz-2 (Week 18)
18	**Mid-Test 2 & Quiz-2**				
19/20	**END EXAM**				