South Central College

COMP 2452 Information Storage and Management

Course Outcome Summary

Course Information

Description This course is designed to provide the student with a strong understanding of underlying storage technologies. This course will cover the varied components of modern information storage infrastructure, including virtual environments. Students will learn about the architectures, features, and benefits of Intelligent Storage Systems; storage networking technologies such as FC-SAN, IP-SAN, NAS, Object-based and unified storage; business continuity solutions such as backup, replication, and archive; the increasingly critical area of information security; and the emerging field of cloud computing. It provides comprehensive learning of storage technology, allowing the student to make more informed decisions in an increasingly complex IT environment.
(Prerequisite: COMP 1200 Hardware and Software Essentials)

Total Credits 4

Total Hours 64

Types of Instruction

Instruction Type	Credits/Hours
Lecture / Active learning	4 / 64

Pre/Corequisites

COMP 1200 Hardware and Software Essentials

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Explain the decisive role of information storage and management to the business.

Learning Objectives
Describe types of data.
Differentiate between structured and unstructured data.

Describe the evolution of storage architecture.
Describe the core elements of a data center.
List the key characteristics of data center.
Describe information storage, virtualization, and cloud computing.
Describe Intelligent storage system and storage provisioning.

2. Summarize key components of classic and virtualized information infrastructure and their requirements.

Learning Objectives

Describe the core elements of a data center.
Describe virtualization at application and host layer.
Describe disk drive components and performance.
Describe host access to storage through DAS.
Describe working and benefits of flash drives.

3. Explain intelligent storage systems architecture and working principles.

Learning Objectives

Describe the key components of intelligent storage system.
Describe cache management and protection techniques.
Describe two storage provisioning methods.
Describe two types of intelligent storage system.

4. Explain storage provisioning and RAID level implementations based on application requirements.

Learning Objectives

Describe RAID implementation methods.
Describe the three RAID techniques.
Describe commonly used RAID levels.
Describe the impact of RAID on performance.
Compare RAID levels based on their cost, performance, and protection.

5. Differentiate and deploy various storage-networking solutions based on application requirements.

Learning Objectives

Describe the key components of intelligent storage system.
Describe cache management and protection techniques.
Describe two storage provisioning methods.
Describe two types of intelligent storage systems.

6. Discuss FC SAN and IP SAN deployments for applications accessing storage using block level requests.

Learning Objectives

Describe FC SAN and its components.
Describe FC architecture.
Describe FC SAN topologies and zoning.
Describe virtualization in SAN environment.
Describe IP SAN protocols, components, and topology.
Describe FCoE protocol, components, and topology.

7. Discuss NAS deployment for file and data sharing for a collaborative development environment of organizations.

Learning Objectives

Describe NAS, its benefits, and components.
Discuss NAS file-sharing protocols.
Describe different NAS implementations.
Describe file-level virtualization.

8. Describe object-based and unified storage.

Learning Objectives
Describe the object-based storage model.
List the key components of object-based storage.
Describe the storage and retrieval process in object-based storage.
Describe content-addressed storage.
Describe content-addressed storage.
List the key components of unified storage.
Describe the process of data access from unified storage.

9. Perform high-level business continuity planning and decide on a suitable strategy to meet information availability needs.

Learning Objectives
Define business continuity (BC) and information availability (IA).
Explain the impact of information unavailability.
Describe BC planning process.
Explain business impact analysis (BIA).
Explain BC technology solutions.

10. Discuss backup, recovery, and archival requirements and solutions for business-critical data.

Learning Objectives
Describe backup granularities.
Explain backup and recovery operations.
Describe various backup targets.
Explain data deduplication.
Describe backup in virtualized environment.
Explain data archive.

11. Explain replication solutions to meet different business continuity needs.

Learning Objectives
Describe how consistency is ensured in file system and database replication.
Describe host-based, array-based, and network-based local replication technologies.
Explain restore and restart considerations.
Describe local replication in virtualized environment.
Explain synchronous and asynchronous replication mode.
Describe host-based, array-based, and network-based remote replication technologies.
Describe three-site remote replication.
Explain data migration solution.
Describe remote replication and migration in virtualized environment.

12. Discuss benefits of cloud computing and deploy effective cloud computing deployment model and service offerings for businesses / IT organizations.

Learning Objectives
Explain the characteristics of cloud computing.
Describe cloud services and deployment models.
Describe cloud computing infrastructure.
Discuss the challenges of cloud computing.
Discuss cloud adoption considerations.

13. Analyze security concerns and solution for information infrastructure.

Learning Objectives
Describe information security framework.
Explain various storage security domains.
Discuss security implementations in SAN, NAS, and IP SAN.
Explain security in virtualized and cloud environments.

14. Perform monitoring and management of information infrastructure.

Learning Objectives
Describe information security framework.

Explain various storage security domains.
Discuss security implementations in SAN, NAS, and IP SAN.
Explain security in virtualized and cloud environments.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.