



Kot Bhalwal, Jammu



Model Institute of Engineering
& Technology (Autonomous)
Course Handout

COURSE HANDOUT

INFORMATION STORAGE MANAGEMENT

(MCSE102)

M.TECH CSE -1st SEMESTER

ACADEMIC YEAR (2023-24)

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Dr. Arun K. Gupta Teaching-Learning Centre

Version 1.1



Please Do Not Print Unless Necessary



Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
MCSE-102	Information Storage Management	PCC	3	3	0	0	25	75	100

COURSE OUTCOMES

At the end of the course, the student will be able to:	
CO1	The explosion in demand from businesses for highly available and secure access to data.
CO2	The Storage systems infrastructure architectures and solutions available to support business Needs.
CO3	The key tasks in successfully managing and monitoring a data storage infrastructure.

Unit-I

Introduction: Meeting Today's Data Storage Needs, Value of data to business, Challenges in data storage and data management, List the solutions available for data storage.

(06 Hours)

Unit-II

Data Storage Solutions: Different media and available solutions to address data storage, Describe the role of each solution relative to data storage needs, Direct Attached Storage (DAS) environment, Network Attached Storage (NAS) environment, Storage Area Networks(SAN).

(07 Hours)

Unit-III

Data Centre Infrastructure: List the core elements of a Data Centre infrastructure, Describe the role of each element to support business activities, Requirements for storage systems to optimally support business activities, challenges and activities in managing storage systems in a data center.

(08 Hours)

Unit-IV

Storage System Architecture: Logical components, file systems, volume management, Host Bus Adapters, key protocols and concepts used by each component, physical components of a connectivity environment, logical components of a connectivity environment, the concept of RAID and components, Cache Structure and data flow through cache, cache algorithms.

(08 Hours)

Unit-V

Information Availability: Downtime, Business Continuity (BC) and Disaster Recovery (DR), Define RTO, RPO, and RGO, Database backup methods, Back-Up Topologies for LAN and SAN-based backups, local information availability, technologies within the data center, potential areas of information vulnerability between local and remote data centers, and Disaster Recovery.

(06 Hours)

Textbooks

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Information Storage and Management: Storing, Managing, and Protecting Digital Information	Wiley	EMC Corporation	2 nd (2010)



Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
2	Building Storage Networks	Marc Farley	Tata McGraw Hill	2 nd (2001)
3	Storage Networks: The Complete Reference	Robert Spalding	Tata McGraw Hill	2 nd (2003)

COURSE PLAN

Unit-I

S.No	Topics	Recommended Books
1	Introduction	Book 1, Ch.1
2	Meeting Today's Data Storage Needs	Book 1, Ch. 1
3	Value of data to business	Book 1, Ch.1
4	Challenges in data storage	Book 1, Ch.2
5	Challenges in data management	Book 1, Ch.2
6	List the solutions available for data storage	Book 1, Ch.2

Unit-II

7	Introduction to Data Storage Solutions	Book 1, Ch.3
8	Different media to address data storage	Book 1, Ch.4
9	Available solutions to address data storage	Book 1, Ch.4
10	Describe the role of each solution relative to data storage needs	Book 1, Ch.4
11	Direct Attached Storage (DAS) environment	Book 1, Ch.5
12	Network Attached Storage (NAS) environment	Book 1, Ch.7
13	Storage Area Networks(SAN)	Book 1, Ch.6

Unit-III

14	Introduction to Data Centre Infrastructure	Book 1, Ch.8,9
15	List the core elements of a Data Centre infrastructure	Book 1, Ch. 8,9
16	Describe the role of each element to support business activities	Book 1, Ch. 8,9
17	Requirements for storage systems to optimally support business activities	Book 1, Ch. 8,9
18	Requirements: Performance, capacity planning, reliability, security, and cost efficiency.	Book 1, Ch. 8,9
19	Requirements: Compliance, integration, management, and future trends	Book 1, Ch. 8,9
20	Challenges in managing storage systems in a data center	Book 1, Ch. 8,9
21	Activities in managing storage systems in a data center	Book 1, Ch. 8,9

Unit-IV

22	Storage System Architecture: Logical components, file systems, Volume Management	Book 1, Ch.10, Ch.11
23	Host Bus Adapters	Book 1, Ch.10, Ch.11
24	Key protocols and concepts used by each component	Book 1, Ch.10, Ch.11
25	Physical components of a connectivity environment	Book 1, Ch.10, Ch.11
26	Logical components of a connectivity environment	Book 1, Ch.10, Ch.11
27	Concept of RAID and components	Book 1, Ch.12
28	Cache Structure and data flow through Cache	Book 1, Ch.13
29	Cache Algorithms	Book 1, Ch.13



Unit-V		
30	Downtime, Business Continuity (BC) and Disaster Recovery (DR)	Book 1, Ch.14
31	Define RTO, RPO, and RGO	Book 1, Ch.14
32	Database backup methods, Back-Up Topologies for LAN and SAN-based backups	Book 1, Ch.14
33	Local information availability, technologies within the data center	Book 1, Ch.14
34	Potential areas of information vulnerability between local and remote data centers	Book 1, Ch.15,16
35	Disaster Recovery	Book 1, Ch.17

ADDITIONAL WEB RESOURCES

1.	MOOC: Data Management and Storage in the Cloud by Google Cloud https://www.coursera.org/learn/data-management-and-storage-in-the-cloud
2.	NPTEL: Video lectures on Storage Systems by Prof. K. Gopinath, IIT Bombay https://nptel.ac.in/courses/106108058

GRADING AND ASSESSMENT

- **Sessional Test:** 10 marks
- **Assignment:** 10 marks
- **Attendance:** 5 marks
- **Final Examination:** 75 marks

COURSE POLICIES

- **Attendance:** A minimum of 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**
Monday (12:55 PM - 1:45 PM)
Friday (12:55 PM - 1:45 PM)
- **Contact Information**
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