

GUJARAT TECHNOLOGICAL UNIVERSITY

Computer Science & Engineering

M.E. Semester: IV

Subject Name: **Distributed Database System.**

Sr. No.	Course Content
1.	Introduction: Distributed Data Processing, Promises of DDBs, Complicating Factors, and Problem Areas.
2.	Overview Of Relational DBMS: Relational Database concepts, Normalization, Integrity Rules, Relational Data Languages.
3.	Review Of Computer Networks: Data Communication Concepts, Types of Networks, Protocol Standards, Broadband Networks, Wireless Networks.
4.	Distributed DBMS Architecture: DBMS Standardization, Architectural Models for Distributed DBMSs, Distributed DBMS Architecture.
5.	Distributed Database Design: Alternative Design Strategies, Distribution Design Issues, Fragmentation, and Allocation.
6.	Semantic Data Control: View Management, Data Security, Semantic Integrity control.
7.	Overview of Query Processing: Query Processing Problem, Objective of Query Processing, Complexity of Relational Algebra Operations, Characterization of Query Processors, Layers of Query Processing.
8.	Query Decomposition & Data Localization: Query Decomposition, Localization of Distributed Data.
9.	Optimization of Distributed queries: Query optimization, Centralized Query optimization, Join Ordering in Fragmented Queries, Distributed Query Optimization algorithms.
10.	Introduction to Transaction Management: Definition Of Transaction, Properties of Transactions, Types of Transactions.
11.	Distributed Concurrency Control: Serializability Theory, Taxonomy of Concurrency control Mechanisms, Lock based Concurrency control Mechanisms, TimeStamp-Based Concurrency control Algorithms, Optimistic Concurrency control Algorithms, Deadlock Management, Relaxed Concurrency Control.

12.	Distributed DBMS Reliability: Reliability Concepts & Measures, Failures & Fault Tolerance in Distributed systems, Failures in Distributed DBMS, Local Reliability Protocols, Distributed Reliability Protocols, Dealing with site failures, Network Partitioning.
13.	Parallel Database Systems: Database Servers, Parallel Architectures, Parallel DBMS Techniques, Parallel Execution problems, Parallel Execution For Hierarchical Architecture.
14.	Distributed Object Database Management Systems: Fundamental objects concepts & object models, Object distribution design, Architectural issues, Object Management, Distributed Object Storage, Object Query Processing, Transaction Management.
15.	Database Interoperability: Database Integration, Query Processing, Transaction Management, Object Orientation & Interoperability.
16.	Current Issues: Data Delivery Alternatives, Data Warehousing, World Wide Web, Push-based Technologies, Mobile Databases.

Reference Books:

1. Principles of Distributed Database Systems by M. TAMER OZSU, Patrick Valduriez, S. Sridhar (Pearson Publication)
2. Spatial Databases: A Tour by Shekhar (Pearson Publication)
3. Distributed Databases Principles And Systems by Stefano Ceri, Giuseppe Pelagatti (Mcgraw Hill)