ADVANCED DATABASE MANAGEMENT SYSTEMS

Course Code: 13CS2104 **L P C**
4 0 3

Pre requisites: Data base management systems, Distributed Databases

Course Educational Objectives:

The main objective of the course is to introduce the students to different data storage mechanisms process learning and make students to learn various query processing and optimizing techniques.

Course outcomes:

Upon completion of this course, the student should be able to:

- Describe storage technology solutions.
- Describe various queries in databases like RDBMS, ORDBMS AND OODBMS.
- Understand the concepts of XML query processing's and script languages'
- Familiar with the basic issues of transaction processing and concurrency control.
- Master the basics of query evaluation and query optimization techniques.

UNIT - I

History of Data base Systems. Data base System Applications, data base System VS file System.

data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML. Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views**.** Introduction of Object Database Systems, Structured Data types, operations on structured data, Encapsulation and ADTS, Inheritance.

UNIT – II

Database design for ORDBMS, ORBMS implementation and challenges, OODBMS, comparison of RDBMS, OODBMS and ORDBMS. (chapter 23 from text book 1)

Introduction to Parallel databases, architectures for parallel databases, Parallel Query Evaluation – data partitioning and parallelising sequential operator evaluation code, Parallelising individual operations, and parallel Query optimization.

UNIT – III

Introduction to distributed databases; features of distributed databases vs centralized databases, Why distributed databases, DDBMS, levels of transparency- reference architecture for DDB, types of data fragmentation, distribution transparency for read-only and update applications, distributed database access primitives, Integrity Constraints in Distributed databases

UNIT - IV

Distributed database design: framework for distributed database design, the design of database fragmentation, allocation of fragments;

Distributed Query processing: Equivalence of transformations for queries, transforming global queries into fragment queries, distributed grouping and aggregation functions, parametric queries.

UNIT - V

A framework for query optimization, join queries and general queries. non-join queries in a distributed DBMS, joins in a distributed DBMS, cost based query optimization. (chapter 5 and 6 from text book 2). DBMS Vs IR systems, Introduction to Information retrieval, Indexing for text search, web search engine, managing text in a DBMS, a data model for XML, Querying XML data, and efficient evaluation of XML queries.

Text Books:

1. Raghuramakrishnan and Johannes Gehrke, "Database Management Systems", 3rd Edition, TMH, 2006.
2. S Ceri and G Pelagatti, "Distributed databases principles and systems", 1st Edition, TMH, 2008.

References:

1. Silberschatz, Korth, "Database System Concepts", 6th Edition, TMH, 2010.
2. Elmasri R, Navathe S B, Somayajulu D V L N, and Gupta S K, "Fundamentals of Database Systems", 5th Edition, Pearson Education, 2009.
3. C. J. Date, " Introduction to Database Systems", 8th Edition, Pearson Education, 2009.