Syllabus:

DISTRIBUTED DATABASES (23IT512)
(Professional Elective – II)

B.Tech. III Year II Semester								
Course Code	Category	Hours / Week			Credits	Maxiumum Marks		
		L	T	P	C	CIA	SEE	Total
23IT512	Elective	3	0	0	3	40	60	100
Contact classes:60	Tutorial Classes : NIL	Practical classes : NIL				Total Classes :60		
Pre requisites: "1.A course on "Database Management Systems"								

Course Objectives:

1. To enrich the previous knowledge of database systems and expose the need for distributed database technology to confront the deficiencies of the centralized database systems.
2. To introduce basic principles and implementation techniques of distributed database systems.
3. To equip with principles and knowledge of parallel and object-oriented databases.
4. To understand distributed DBMS architecture and design; query processing and optimization
5. To realize the importance of distributed transaction management and reliability; parallel and object database management systems.

Course Outcomes: Upon completing this course, the student will be able to

1. Known theoretical and practical aspects of distributed database systems.
2. Identify various issues related to the development of distributed database systems
3. Implement design aspects of object-oriented database systems and related Developments.
4. Equip with distributed DBMS architecture and design; query processing and optimization
5. Equip with distributed transaction management and reliability; parallel and object database management systems.

COURSE SYLLABUS

UNIT – I

Introduction; Distributed Data Processing, Distributed Database System, Promises of DDBSs, Problem areas.

Distributed DBMS Architecture: Architectural Models for Distributed DBMS, DDMBS Architecture. **Distributed Database Design**: Alternative Design Strategies, Distribution Design issues, Fragmentation, Allocation.

UNIT - II

Query processing and decomposition: Query processing objectives, characterization of query processors, layers of query processing, query decomposition, localization of distributed data.
Distributed query Optimization: Query optimization, centralized query optimization, distributed query optimization algorithms.

UNIT - III

Transaction Management: Definition, properties of transaction, types of transactions, distributed concurrency control: serializability, concurrency control mechanisms & algorithms, time - stamped & optimistic concurrency control Algorithms, deadlock Management.

UNIT - IV

Distributed DBMS Reliability: Reliability concepts and measures, fault-tolerance in distributed systems, failures in Distributed DBMS, local & distributed reliability protocols, site failures and network partitioning.
Parallel Database Systems: Parallel database system architectures, parallel data placement, parallel query processing, load balancing, database clusters.

UNIT - V

Distributed object Database Management Systems: Fundamental object concepts and models, object distributed design, architectural issues, object management, distributed object storage, object query Processing.

Object Oriented Data Model: Inheritance, object identity, persistent programming languages, persistence of objects, comparison OODBMS and ORDBMS

TEXT BOOKS:

1. M. Tamer OZSU and Patuck Valduriez: Principles of Distributed Database Systems, Pearson Edn. Asia, 2001.
2. Stefano Ceri and Giuseppe Pelagatti: Distributed Databases, McGraw Hill.

REFERENCE BOOK:

1. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: “Database Systems: The Complete Book”, Second Edition, Pearson International Edition.