Course Code	Course/Subject Name	Credits
CPC603	**Distributed Databases**	05

Objectives:
1. To introduce principles and foundations of distributed databases, including architecture, design issues, integrity control, query processing and optimization, transactions, and concurrency control.
2. To enable students to understand the difference between different database system and integrate the.

Outcomes: Learner will be able to…
1. Design and implement distributed database for enterprise application.
2. Provides solutions for heterogeneous database
3. Use XML for schema integration.

Module	Detailed Contents	Hrs.
01	**Concept and Overview Distributed Database system** 1.1 What is Distributed Database System (DDBS), Features of DDBS, promises of DDBS, Design issue in DDBS, Distributed DBMS architecture: Client/server System, Peer-to-Peer, Mutli-Database system.	08
02	**Distributed Database Design** 2.1 Distributed database design concept, objective of Data Distribution, Data Fragmentation, The allocation of fragment , Transparencies in Distributed Database Design	08
03	**Distributed Transaction and concurrency control** 3.1 Basic concept of Transaction management, objective Distributed transaction management, Model for Transaction management 3.2 Distributed Concurrency control: Objective, concurrency control anomalies, Distributed Serializability, Locking based algorithm, Timestamp based algorithm.	08
04	**Distributed Deadlock and Recovery** 4.1 Introduction to Deadlock, Distributed Deadlock prevention, avoidance, detection and recovery, Two-Phase and Three-Phase Commit Protocol.	06
05	**Distributed query processing and optimization** 5.1 Concept, objective, and phases of distributed query processing; join strategies in fragment relation , Global query optimization	04
06	**Heterogeneous Database** 6.1 Architecture of Heterogeneous Database, Database Integration: Schema Translation and schema Integration, Query processing issues in Heterogeneous database.	06

07	XML	08
	7.1 XML for data integration, structure of XML, XML document schema, Querying and Transformation, storage of XML data, XML application.	

Term Work:

Assign a case study for group of 2/3 students and each group to perform the following experiments on their case-study:

- Creation of centralized database (Global Schema).
- Perform Fragmentation (PHF, DHF, VF, and HF) and allocation in DDBS design.
- Implementation of concurrency control.
- Implementations of two phase or three phases commit protocol.
- Implementations of three deadlock detection.
- Simulation of distributed query processor.
- Implementation of query optimization.
- Implementation any two experiment on XML

The distribution of marks for term work shall be as follows:
- Laboratory work (experiments/assignments): ………….. (10)   Marks.
- Course project:…………………………………… (10)   Marks.
- Attendance ………………………………………. (05)   Marks
- **TOTAL: ………………………………………………. (25)   Marks.**

Practical/Oral examination:

An oral exam will be held based on the above syllabus.

Text Books:

1. Chhanda Ray , "Distributed Database System", Pearson Education India.

2. A. Siberschatz, H. Korth, "Database System", Six Edition, Mc-Graw Hill.

3. Seed K. Rahimi and Frank S. Haug, "Distributed Database Management System", Wiley India.

Reference Books:

1. M. Tamer Ozsu , Patrick Valduriez, "Principles of Distributed Database", Pearson Education India.
2. Elmasri and Navathe, "Fundamentals of Database Systems", 6th Edition, Pearson Education India.