Approval: 4th Senate Meeting

Course Name : Distributed Databases
Course Number : CS-456
Credits : 3-0-0-3
Students intended for: Third Year and Fourth Year CS students Elective or Compulsory: Elective
Semester : Odd or Even
Prerequisites :CS204 and CS206

Objectives of the course: The major objective of this course is to introduce the student to the theory, algorithms, and methods that underlie distributed database management systems. The student should also acquire insights into distributed DBMS architecture, query decomposition and data localization, transaction management, and distributed concurrency control.

Evaluation:
Group Project
Quizzes
Class Assignments
Class participation
Final Exam

Proposed Curriculum: (if possible, separated in to approximate units each corresponding to 10 contact hours):

1. Introduction
    a. Distributed Data Processing
    b. Concepts of Distributed Database Systems
2. Distributed DBMS Architecture
    Transparency Issues
    Architectural Models
    Distributed Database Design
3. Distributed Database Design Issues
    a. A Fragmentation
    b. Allocation
    c. Integrity Constraints
4. Query Processing
    - Objectives of Query Processing
    - Layers of Query Processing
    - Query Decomposition and Data Localization
5. Optimization of Distributed Queries
    a. Centralized Query Optimization
    b. Join Ordering
    c. Distributed Query Optimization Algorithms
6. Advanced Topics

a. Distributed Transaction Management and Concurrency Control , Distributed DBMS
b. Reliability and Replication Techniques, Multidatabase Systems

Suggested Reading:

1. M.TamerOzsu, Patrick Valduriez, Principles of Distributed database systems, 2nd Edition, Pearson Education.
2. Stefano Ceri, Giuseppe Pelagatti, Distributed Databases: Principles & Systems, McGraw- Hill.