(CS601) ADVANCED DATABASE MANAGEMENT SYSTEMS

Objective of the course :

The objective of the course is to present an introduction to database management systems (DBMS), with an emphasis on how to organize, maintain and retrieve efficiently, and effectively information from a DBMS. The course focuses on the areas of : Information gathering, Data analysis, Database design,Concurrency and robustness, Efficiency and scalability.

UNIT - I

Database System concepts : Database System concepts and architecture, Data modeling using Entity Relationship (ER) model and Enhanced ER model, Specialization, Generalization, Data Storage and indexing, Single level and multi level indexing, Dynamic Multi level indexing using B Trees and B+ Trees.

UNIT - II

Relational data Model : The Relational data Model, Relational database design using ER to relational mapping, Relational algebra and relational calculus, Tuple Relational Calculus, Domain Relational Calculus, SQL.

UNIT - III

Database design theory and methodology : Database design theory and methodology, Functional dependencies and normalization of relational databases, Normal Forms, Properties of relational decomposition, Algorithms for relational database schema design

UNIT - IV

Transaction processing concepts : Transaction processing concepts, Schedules and serializability, Concurrency control, Two Phase Locking Techniques, Optimistic Concurrency Control, Database recovery concepts and techniques.

UNIT - V

Object Oriented Database Systems : Object Oriented Database Systems: User Defined ADTs, Objects, Object Identity and Reference types, Object relational and extended relational database systems, Distributed database concepts, overview of client-server architecture and its relationship to distributed database, Introduction to database security.

TEXT BOOK :

1. Elmasri, Navathe, Somayajulu, Gupta, "Fundamentals of Database Systems" 1st ed., Pearson Education, 2006.

REFERENCE BOOKS :

1. Ramakrishnan R. & Gehrke J., "Database Management Systems" 3rd ed., McGraw Hill, 2003.

2. S K Singh, "Database Systems-Concepts, Design and Applications" 2nd ed., Pearson Education, 2006.

3. Silberschatz, Korth H. F. & Sudarshan S, "Database System Concepts", 1st ed., Tata McGraw Hill, 2004.