Database Management System

II YEAR SEM-1 B.Tech CSE	CORE	L	T	P	C
CODE:CS2103	DATABASE MANAGEMENT SYSTEMS	2	2	0	4

SYLLABUS

Unit I (Introduction and ER model)

i)Introduction to database systems, File System vs. Database Systems, Database system structure, Views of data in a database system, Data models and Database languages.
ii) Introduction to Entity-Relationship data model, Elements of an ER model, Constructing ER diagrams, Modelling of constraints, Reduction of ER diagrams to tables.

Unit II (Relational data model, relational algebra and tuple calculus)
Basics of relational model, ER diagrams to relational design, Relational algebra: Simple operations and extended operations, writing relational algebra expressions for queries, Introduction to tuple calculus and writing basic queries using tuple calculus.

Unit III (SQL)
Basic structure of SQL queries, Writing simple queries, Complex queries and nested Subqueries in SQL, Aggregate functions in SQL, Effect of NULL values on result, Defining a Relational Schema, View definitions and constraints, types of keys.

Unit IV (Relational Database Design)
Features of Good Relational Designs, Atomic Domains and First Normal Form, Problems encountered in bad schema design, Motivation for normal forms, Dependency theory-functional dependencies, Armstrong's Axioms for FD, Closure of a set of FD's, Minimal Cover, Definition of 1NF, 2NF, 3NF and BCNF, Decomposition and desirable properties of them, Algorithms for 3NF and BCNF normalization.

Unit V (Index Structure)
Storing data in disk and files and the memory hierarchy, RAID, Disk space management, Buffer manager, File organization and indexes.

Unit VI (Transaction Management)
Transaction concept, ACID properties, Concurrency in a DBMS, Serializability and Recoverability, Concurrency control Protocols (lock-based and time-stamp based)

Text Books

1. A. Silberschatatz, H. F. Korth and S. Sudarshan, Database System Concepts, 5/e, McGraw Hill,2006
2. R. Ramakrishnan and J. Gehrke, Database System Concepts, 3/e, McGraw Hill, 2003

Reference Books

1. RamezElmasri, Shamkant B. Navathe ,Fundamentals of Database (7th Edition), Paperback, 2007
2. Theorey T J, Database Modeling & Design, 2/e, Morgan Kaufmann Publishers, 1994.
3. H. GarciaMolina, J. D. Ullman and J. Widom, Database Systems The Complete Book, 1/e, Pearson Education, 2007