

DATA BASE MANAGEMENT SYSTEMS

B.Tech. II Year II Semester

Course Code	Category	Hours / Week			Credits	Maxumum Marks		
		L	T	P		C	CIA	SEE
CS2204PC	Core	3	1	0	4	30	70	100
		Tutorial Classes : 15		Practical classes : NIL		Total Classes :60		
Prerequisites: A course on "Data Structures".								

Course Objectives:

- To understand the basic concepts and the applications of data base systems.
- To master the basics of SQL and construct queries using SQL.
- To learn models, data base design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

Course Outcomes:

- Gain knowledge of fundamentals of DBMS,data base design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with data bases access techniques

COURSE SYLLABUS

MODULE- I

Database System Applications: A Historical Perspective, File Systems versus a DBMS, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS

Introduction to Database Design: Data base Design and ER Diagrams, Entities, Attributes and EntitySets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual DesignWith the ERModel

MODULE- II

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical data base design, introduction to views, destroying/altering tables and views.

Relational Algebra, Tuple relational Calculus, Domain relational calculus.

MODULE- III

SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases.

Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms, BCNF, lossless join decomposition, multi-valued dependencies, FOURTH normal form, FIFTH normal form.

MODULE- IV

Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple Granularity, Recovery and Atomicity , Log-Based Recovery, Recovery with Concurrent Transactions.

MODULE- V

Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index at a Structures, Hash Based Indexing, Tree base Indexing, Comparison of File Organizations, Indexes and Performance Tuning, Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM), B+Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, *Tata McGraw Hill* , 3rd Edition
2. Database System Concepts, Silberschatz, Korth, *McGraw Hill*, 7th Edition.

REFERENCE BOOKS:

1. Data base Systems design, Implementation and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, *PearsonEducation*
3. Introduction to Data base Systems,C.J. Date,*PearsonEducation*
4. Oracle for Professionals, The XTeam, S.Shah and V.Shah, *SPD*.
5. Data base Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, *PHI*.
6. Fundamentals of Database Management Systems, M.L.Gillen son, *WileyStudentEdition*.