2MCACC1: DATABASE MANAGEMENT SYSTEMS

Total No. of Hours: 52 **Hours/Week: 04**

Course Objective: To understand the concept of data modelling, file management and data management.

Course Outcome: Students will be able to

CO1: Describe basic concepts of database management systems

CO2: Design and develop database application software using RDBMS, relational Algebra and SQL programming

CO3: Understand the security aspects of DBMS

CO4: Explore the importance of distributed and object oriented design architecture and features.

Unit I	**Introduction**: Data, Information, Database management system, characteristics, applications, advantages, costs and risks of DBMS approach, database users. DB Languages, User Interfaces. Database system concepts, DBMS Architecture, Data models–Relational, Network, Hierarchical, Schemas, Three schema Architecture Data Independence- logical and physical data independence.	10 hrs
Unit II	**Storage structure and file Organization**: Primary and secondary storage devices, sequential, indexed sequential, random file access, hashing techniques**.** **E-R data model**: Entities, attributes, relationships, relationship types, roles, constraints. Different types of attributes, Case Study: Domain based problem - Company database, naming conventions, design issues, conceptual design, Drawing E-R diagrams	10 hrs
Unit III	**Relational data model**: concepts, Relational constraints - domain, key, entity integrity and referential integrity constraints. **Relational algebra**: Select, project and join operations Normalization concepts - first, second, third normal forms, Boyce-Codd normal form, Fourth normal form.	10 hrs
Unit IV	**The Relational Database Standard:** Data definition, Constraints, Basic Queries in SQL, Nested queries, Aggregate Functions and grouping, Views in SQL. Procedures, triggers, Transaction and system concepts	15 hrs
Unit V	**Data Administration:** Introduction, security issues, Concurrency control Techniques, Database recovery techniques. **Object Databases**: Concepts, Object model, object definition and query language, Object based conceptual design. **Distributed databases**: Introduction, advantages and disadvantages, Types of distributed database systems.	7 hrs

REFERENCE BOOKS

[1] Ramez Elmasri, Shamkant B Navathe, "*Fundamentals of Database Systems*", Addison Wesley, Pearson Education, Seventh Edition.

[2] Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "*Database System Concepts*", Tata McGraw Hill, Sixth Edition.

[3] Jeffry A Hoffer, Mary B Prescott, HeikkiTopi, "*Modern Database management System*", Pearson Education, Ninth Edition

[4] Carlos Coronel, Steven Morris, Peter Rob, "*Database System Design, Implementation and Management*", Thompson Learning Course Technology, Ninth Edition