

**AIM:**

To provide a strong foundation in database technology and an introduction to the current trends in this field.

**OBJECTIVES:**

- To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- To have an introductory knowledge about the Storage and Query processing techniques

**UNIT I INTRODUCTION 9**

Purpose of Database System — Views of data — Data Models — Database Languages — Database System Architecture — Database users and Administrator — Entity-Relationship model — E-R Diagrams — Introduction to relational databases

**UNIT II RELATIONAL MODEL 9**

The relational Model — The catalog- Types- Keys - Relational Algebra — Domain Relational Calculus — Tuple Relational Calculus - Fundamental operations — Additional Operations- SQL fundamentals - Integrity — Triggers - Security — Advanced SQL features —Embedded SQL— Dynamic SQL- Missing Information— Views — Introduction to Distributed Databases and Client/Server Databases

**UNIT III DATABASE DESIGN 9**

Functional Dependencies — Non-loss Decomposition — Functional Dependencies — First, Second, Third Normal Forms, Dependency Preservation — Boyce/Codd Normal Form- Multi-valued Dependencies and Fourth Normal Form — Join Dependencies and Fifth Normal Form

**UNIT IV TRANSACTIONS 9**

Transaction Concepts - Transaction Recovery — ACID Properties — System Recovery — Media Recovery — Two Phase Commit - Save Points — SQL Facilities for recovery — Concurrency — Need for Concurrency — Locking Protocols — Two Phase Locking — Intent Locking — Deadlock- Serializability — Recovery Isolation Levels — SQL Facilities for Concurrency

**UNIT V IMPLEMENTATION TECHNIQUES 9**

Overview of Physical Storage Media — Magnetic Disks — RAID — Tertiary storage — File Organization — Organization of Records in Files — Indexing and Hashing —Ordered Indices — B+ tree Index Files — B tree Index Files — Static Hashing — Dynamic Hashing — Query Processing Overview — Catalog Information for Cost Estimation — Selection Operation — Sorting — Join Operation — Database Tuning.

**TOTAL= 45 PERIODS****TEXT BOOKS:**

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Fifth Edition, Tata McGraw Hill, 2006 (Unit I and Unit-V).
2. C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.( Unit II, III and IV)