

Branch: B.Sc.(IT)	Semester-III
Subject Code: 3101	Lecture: 04 Credit: 04
Course Opted	Core Course – 7
Subject Title	DATABASE MANAGEMENT SYSTEMS

Course Objectives:

- To introduce the concept of database management systems
- Learn to organize, maintain and retrieve information efficiently and effectively from a database management system
- To present the concepts and techniques relating to query processing by SQL
- To introduce the concepts of transactions and transaction processing
- To present the issues and techniques relating to concurrency and recovery in multiuser database environments

Course Outcomes:

The student would be able to

- Understand the Concept of database approach.
- Understand database architecture and data modeling, data Normalization.
- Design and draw ER and EER diagram for real life problem.
- Understand the commands of SQL.
- Understand the concept of transaction, concurrency and recovery.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT - I	1	Database Management System Concepts: Basic concept and definition, Traditional file system, File processing system vs DBMS, Significance and objectives of database, Abstraction and data integration, Applications of DBMS.	3	6
	2	Database Systems and Architecture: Three Tier Architecture, Centralized and Client-Server Architecture, Mapping: MySQL Architecture, SQL Server 2000 Architecture, Oracle Architecture	3	6
UNIT - II	3	Data Models: Object Based Logical Model: Object Oriented Data Model; Entity Relationship Data Model, Record Base Logical Model: Network data model; Hierarchical data model; Relational data model,	4	8
	4	Database Design: ER Diagram Concepts, EER Diagram, Relational Database Design by ER and EER to Relational Mapping, Extended E-R Features: Specialization, Generalization, Aggregation, Problems on Reduction of an E-R Schema to Tables, Tabular representation of Strong, Weak entity Sets and Relationship Sets.	6	12
	5	Introduction to RDBMS: Relational Algebra operations, Object-oriented database, Distributed Database, No SQL, Graph Database, Keys, Functional Dependencies, 1NF, 2NF, 3NF, BCNF, 4NF, 5NF	5	10

UNIT -III	6	Introduction to SQL: About SQL and use of developer tool, data types and operators in oracle.	2	4
	7	Data Retrieval Techniques: Use select statement in different ways, data filtering and sorting, types of oracle clauses.	4	8
	8	Working with DDL and DML commands: DDL commands: create, drop, alter, modify, rename, delete and truncate. DML commands for copying data, inserting row, update any row and merge command.	6	12
UNIT -IV	9	Integrity constraints and Functions: Types of Integrity constraints, Built-in-functions. Data Aggregation: Working with aggregate function: count(), sum(), max(), min(), avg(), Group by, Where and Having clause, understanding join and its uses, Types of Join.	9	18
	10	Transaction Processing System and Concurrency Control Techniques: Need of concurrency control, ACID Properties, Schedule & serializability, 2PL, Timestamp Ordering, Optimistic Concurrency Control technique, Deadlock Database Backup & Recovery: Remote backup, Recovery concepts, Caching, Checkpoints, Transaction Rollback	8	16
TOTAL			50	100

Text Book:

1. Korth, Silberschatz, "Database System Concepts", McGraw-Hill, 27-Jan-2010

Reference Books:

1. Elmasri and Navathe, "Fundamentals of Database Systems", McGraw-Hill, 2010
2. Ivan Bayross, "Oracle-the complete reference": BPB Publications
3. Dr. P.S.Deshpande SQL & PL/SQL for Oracle 10g Black Book
4. Gio Wiederhold, "Database Design", McGraw-Hill 1995.