



**C. U. SHAH UNIVERSITY**  
**Wadhwan City**

**FACULTY OF:-** Computer Science  
**DEPARTMENT OF:-** Master of Computer Applications  
**SEMESTER:-** -III  
**CODE:-** - 5CS03MDB1  
**NAME:-** – DATABASE MANAGEMENT SYSTEM (DBMS)

**Teaching and Evaluation Scheme**

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03MDB1	Database Management System (DBMS)	4	-	-	4	4	30	1.5	70	3	-	-	---	100

**Objectives**

- This course is designed to make student familiar with the fundamental concepts of DBMS for designing and implementing database systems by using the tools like SQL..

**Prerequisites**

Basic knowledge of working with computer.

**Course Outline**

Sr. No.	Course Contents	Number of Hours
1	<p><b>Database Concepts and Architecture</b></p> <p>Preliminary concepts: data, database, database systems, database management systems, Components of database system, Functions of DBMS</p> <p>Characteristics and elements of database system</p> <p>Schema, Instance and Database State Database Applications, Purpose and Advantages of Database Management System (over file systems), View of Data (Data Abstraction, Data Models) Data Storage and Querying (Components, Storage Manager, Query Processor)</p> <p>Database Architecture (Client/Server and Three Tier Architecture) Database User and Administrators</p>	10



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2	<p><b>Features of Entity Relationship Diagram</b></p> <p>Entity Relational Model (Entity Sets, Relationship Sets, Attributes), Constraints (Mapping Cardinalities, Keys, Participation Constraints), Entity Relationship Diagram, Weak Entity Set, Extended E-R Features (Generalization, Specialization and Aggregation), E-R Notations Examples of ERD</p>	10
3	<p><b>Relational Model and Database Design</b></p> <p>Relational structure – tables (relations), rows (tuples), domains, columns (attributes) Database design process, Anomalies in a database Functional Dependencies (Definition, Types of Functional Dependency) Decomposition: (Definition, Loosy Decomposition, Lossless join decomposition, Dependency preserving decomposition) Closure set of FD, Canonical Cover Normalization up-to 3NF</p>	12
4	<p><b>Introduction to SQL</b></p> <p>Basic Data Types of ORACLE Data Definition Language (DDL) Data Manipulation Language (DML) Data Control Language (DCL) Transaction Control Language (TCL) Data Constraints, Inbuilt Functions Subqueries, Join, Indexes, Views, Sequences, Synonyms, Set Operators ORACLE Utility – Import, Export</p>	10
5	<p><b>Relational Algebra</b></p> <p>Native Relational Operations (Selection, Projection, Join, Difference) Additional Operations (Rename, Assignment, Generalized Projection, Aggregation) Relational Algebra Examples</p>	08
<b>Total hours</b>		<b>50</b>



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### **Learning Outcomes**

Enable the student to model the real world data into database framework.

Creation of conceptual design using tools like E-R Diagram.

Clear understanding of how to map the logical design of database into physical design.

To get familiar with the SQL query environment.

Representation of queries into equivalent relational algebraic expression

### **Books Recommended:-**

1. Database System Concepts, **Silberschatz, Korth, Sudarshan**, 5th Edition, Publisher-McGraw Hill Publication
2. Fundamentals of Database Systems, **Elmsari, Navathe**, 5th Edition, Publisher-Pearson Education (2008)
3. An Introduction to Database Systems, **C J Date, A Kannan, S Swaminathan**, 8th Edition, Publisher-Pearson Education (2006)