

GUJARAT TECHNOLOGICAL UNIVERSITY
MASTER OF COMPUTER APPLICATIONS (MCA)
Semester: V

Subject Name: **Advanced Data Base Management Systems (ADBMS)**
(Elective II)

Subject Code: **650004**

Learning Objectives:

- To introduce the basics of Database Administration
- To give a detailed understanding of how to maintain a database quickly & accurately.
- The students will be able to design and manage the Database Server to solve the issues related to the Database Server.

Prerequisites:

- Knowledge of DBMS.
- Knowledge of SQL & PL/SQL is desirable.

Contents: (The version for study would be Oracle 9i, but implementation can be demonstrated using the version available in the respective Institutes):

- 1. Getting Started with Database Architecture and Managing Data Storage (10%)**
Introduction to Database, Database System Environment – an Example, Data Models, Schema and Instances, Three Schema Architecture of Database, Component Modules of Database Systems, Database System Utilities, Memory Hierarchy and Storage Devices, Storage of Databases, Buffering of Blocks, Places File Record on Disk, Files of Unordered Records and Unordered Records
- 2. Database Tuning and Database Security (20%)**
Physical Database Design in Relational Database, Overview of Database Tuning and Relational Systems, Database Security and its Issues, Granting and Revoking Privileges, Role Based Access Control for Multilevel Security, Encryption and PKI
- 3. Backup & Recovery in Database and Database Indexing (20%)**
Providing Backup and Recovery, Recovery Concepts, Recovery Techniques Based on Deferred Update and Immediate Update, Recovery in Distributed Database, Distributed Database in Oracle, Types of Single Level Ordered Indexes, Primary Index, Cluster Index, Secondary Index, Multilevel Index
- 4. Managing Different Databases and Distributed Databases (20%)**
Overview of Temporal and Deductive Databases, Temporal Database Concepts, Deductive Database, Distributed Database Concepts, Data Fragmentation, Allocation Techniques for Distributed Database Design, Types of Distributed Database Systems
- 5. Emerging Database Technologies and Object-Relational Databases (20%)**

Overview of Object Relational Features, Current Trends of Database Technology, Implementation and Relational Issues of Extended Type, Nested Relational Model, Mobile Databases, Multimedia Databases, Geographic Information Systems, Genome Database Systems

6. Oracle Net, Utilities, Backup and Recovery (10%)

Oracle Net Configuration, Concept of Service Name, Listener, Using Oracle Net Configuration Assistant, Using Oracle Net Manager, Bulk Insert : Using SQL*Loader, Managing Large Databases

Text Books:

1. Ramesh Elmasari, Shamkant B. Navathe, “Fundamentals of Database Systems”, Pearson Education, 5th Edition
2. Kevin Loney, Maklene Theriault, “Oracle 9i, DBA Handbook”, Oracle Press, TMGH Publications

Reference Books:

1. Sam R. Alapati, “Expert Oracle9i Database Administration”, Apress,
2. Bob Bryla, Kevin Loney, “Oracle Database 11g DBA Handbook”, Oracle Press, TMGH Publication
3. S. K. Singh, “Database Systems Concepts, Design & Applications”, Pearson Education

Chapter wise Coverage from Text book(s):

Book #	Unit #	Contents
1	Unit 1	Chps. 1.1,1.2, 2.1, 2.2, 2.4.1, 2.4.2, 13.1, 13.1.1, 13.1.2, 13.3, 13.4
	Unit 2	Chps. 16.1.1, 16.1.2, 16.2, 23.1, 23.2, 23.3, 23.6
	Unit 3	Chps. 1.6, 19.1, 19.2, 19.3, 25.5, 25.7, 14.1, 14.2
	Unit 4	Chps. 24.2, 24.4, 25.1, 25.2, 25.3
	Unit 5	Chps. 22.1, 22.2, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4
2	Unit 6	Pgs. 521 – 538, 318 – 323, 552 – 561, 589 – 590