University of Mumbai			
Class: T.E.	**Branch:** Computer Engineering	**Semester:** V	
Subject: Advanced Database Management System(Abbreviated as **ADBMS**)			
Periods per Week (each 60 min)	Lecture	04	
	Practical	02	
	Tutorial	--	
		Hours	Marks
Evaluation System	Theory	03	100
	Practical and Oral	--	50
	Oral	---	--
	Term Work	---	25
	Total	03	175

Module	Contents	Hours
1	**Extended ER** : • E-R model revisited • Specialization & Generalization • Extended E-R • Subclass super class • Constraints and characteristics of specialization & Generalization • Relationship types of degree Higher than two • Aggregation, Union and categories • EER – To Relation Models Mapping	04
2	**Database Design Methodology:** • Role of information system in organization • Database design and Implementation Process	04
3	**Advanced SQL :** • SQL Data types & Schemas • Queries based on SQL 3 standards • (outer join, multi join , left, right, a full outer join, equal join, natural join • Aggregate, functions, Null values etc. • EXIST and NOT EXIST, any / all, pattern matching Dynamic SQL	08
4	**Query Processing :** • Overview • Measures of Query cost • Selection operation • Sorting • Join Operations • Other Operations Evaluation of Expression	04

5	**Query Optimization :** • Translations of SQL Queries into relational algebra • Heuristic approach & cost base optimization	04
6	**Object Relational and Extended Relational Databases :** • Overview of SQL 3 • Implementation issues for extended types, nested relations and collections, • Storage and access methods	06
7	**Parallel and Distributed Databases and Client Server Architecture:** • Introduction : for parallel databases • Parallel : Query Evaluation Parallelizing, individual operations; sorting, joins, etc., distributed databases, concepts, data fragmentation, Replication and allocation techniques for distributed database design. Query Processing in distributed databases, concurrency control and recovery in distributed databases, An overview of Client Server Architecture.	10
8	**XML and Internet Databases:** • Structured unstructured and semi structured data. • XML hierarchical Data Model • XML Document, DTD and XML Schema • XML Documents & databases • XML Query	06

TERM WORK :

1. Atleast 6 practical experiments based on above syllabus
2. A mini project is desirable to be completed by a group of three with following specifications.
   - ❖ Problem definition
   - ❖ EER Model
   - ❖ Mapping to relational Model
   - ❖ Implementation should include user interface having two data entry forms and two reports. (using any connectivity of DBMS)

NOTE: The above (mini project) would carry a weightage of 10 marks.

A term work test must be conducted with a weightage of 10 marks.

Attendance 05 marks.

Practical Exam: Students are expected to develop a database application as a part of practical examination.

Text Books :

1. Elmasri & Navathe " fundamentals of Database Systems" IV edition. PEARSON Education.
2. Korth, Silberschatz sudarshan "Database systems, concepts" 5th edition McGraw Hill.

Reference Books :

1. Raghu Ramkrishnan & Johannes Gehrke "Database Management System" Tata McGraw Hill. III edition.
2. Stefano Ceri, Hillseppe , pelagatti "Distributed Databases, Principles and Systems" Tata Mc Graw Hill editions.
3. Dr. P.S. Deshpande, SQL and PL/SQL for Oracle log, Black Books Dreamtech Press.
4. Mark L. Gillenson, Paulraj Ponniah "Fundamentals of Database Systems" WILEY