

Branch Name:	Computer Engineering / Information Technology/ Information and Communication Technology / Artificial Intelligence and Data Science
Program Code:	ET103/ ET105/ ET107/ ET108
Course Title:	Database Management Systems
Course Code:	2ET1030303T
Pre-requisite Course:	Set Theory, Mathematical relationships, simple file records concept

Course Objective:

1. The core objective of this course is to make the students aware and have some expertise with various facets of database design methodology in oracle database, Microsoft SQL Server, MySQL etc. used in industry nowadays.
2. This course aims to present various, Relational Database, Storage Architecture, Query Language & Processing, Normalization, Function Dependency used for database design during software development.
3. This course shall act as platforms for the students wishing to carry out further development in database management for large enterprises.

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Sr. No	Topic	Total Hours	Weight (%)
1.	Introduction: Purpose & Applications, Database Architecture, Type of DBMS, Data Model, Users Role & Responsibility, Transaction Management	03	05
2.	Relational Model: Structure of Relational Database, Database Schema, Keys, Relational Algebra Operations, Relational Algebra Query Language	04	10
3.	SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Integrity Constraint, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub queries, Modification of the Database, Join Expressions, Aggregation Features, transaction control commands – Commit, Rollback, Savepoint	06	15
4.	E-R Model & Database Design: E-R Model: Overview, Constraints, E-R Diagrams, E-R Design Issues, Advance E-R Model Database Design: Features of Good Database Design, Redundancy, Normalizations, Normal Forms, Decomposition, Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, irreducible set of FD	07	25
5.	Query Processing & Optimization: Overview, Estimating of Query Cost, Evaluation of Expressions, Evaluation Plan, Selection Operation, Sorting, Join Operations, Indexing, Ordered Indices, B+ Tree Index, Static and Dynamic Hashing	06	15
6.	Transaction Management & Advance SQL: Transaction Management: Concept, Transaction Model, ACID Property, Serializability, Transaction Protocols, Deadlock Handling, Recovery Advance SQL: Views, Index, Transactions, Authorization, Functions and Procedures, Triggers, Cursor	06	20
7.	Case Study: Introduction to PostgreSQL, MySQL, NoSQL	02	10

List of References:

1. Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw Hill.
2. An introduction to Database Systems, C J Date, Addison-Wesley.
3. SQL- PL/SQL by Ivan bayross
4. Oracle – The complete reference – TMH /oracle press

E-Resources / Web Links

1. www.codex.cs.yale.edu/avi/db-book/
2. www.pages.cs.wisc.edu/~dbbook/
3. www.techtud.com/computer-science-and-information-technology/database-management-system
4. www.techtud.com/course/practical-approach-dbms
5. www.dadbm.com/dbms-blog/
6. www.studytonight.com/dbms/

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the business data and relation between data	2. Understanding
CLO2	Use of Technology to store the large data	2. Understanding
CLO3	Efficiently usage of data in short response time	2. Understanding
CLO4	Access control over the data	2. Understanding
CLO5	Design of database for real life project	3. Applying

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	L	L										M	M		
CLO2	M	L	L										M	M		
CLO3	M	L	L										M	M		
CLO4	M	L	L										M	M		
CLO5	H	M	M										M	M		

H: High, M: Medium, L: Low