

Subject Code		Name of the Subject						L	T	P	C				
		DATABASE MANAGEMENT SYSTEM						3	0	1	4				
Course Educational Objectives															
Pre -Requisite: A student should have basic idea on programming and file systems.															
CEO 1	Gain a good understanding of the architecture and functioning of Database Management Systems as well as associated tools and techniques.														
CEO 2	Understand and apply the principles of data modeling using Entity Relationship and develop a good database design.														
CEO3	Understand the use of Structured Query Language (SQL) and its syntax														
CEO4	Apply Normalization techniques for effective database design.														
Course Outcomes: <i>Upon successful completion of this course, students should be able to:</i>															
CO1	Identify and Classify the concepts of Database Management system, Data models and architecture of database, ER to Relational mapping concepts.														
CO2	Applying The constraints in database using different query languages like:- relational algebra and calculus implementing the Data definition and data manipulate languages in Database.														
CO3	Compare the different normal forms to Apply normalization process to construct consistent Database.														
CO4	Design and Develop the Database with concurrency control and recovery strategies to make complete Database without confliction and anomalies in concurrent access environment.														
CO5	Develop efficient storage scheme of saving and retrieving Records and Files														
CO6	Apply the principles of database transaction management, database recovery and security.														
CO-PO & PSO Mapping:															
COs	PROGRAMME OUTCOMES												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1												
CO2	3	2	1												
CO3	2	1	1												
CO4	2	1	2												
CO5	2	1	2												
CO6	3	2	1												
Avg.	2.5	1.33	1.33												
SYLLABUS															
UNIT:1 (6 Hours)															
Introduction to database Systems: advantages of database system over traditional file system, Basic concepts & Definitions, Database users, Database Language, Database System Architecture, Schemas, Sub Schemas, & Instances, database constraints, 3-level database architecture, Data Abstraction, Data Independence, Mappings, Structure, Components & functions of DBMS, Data models.															
Entity-Relationship model: Basic concepts, Design process, Constraints, Keys, Design issues, E-R Diagrams, weak entity sets, Extended E-R features – generalization, specialization, aggregation. Reduction to E-R database schema.															

UNIT:2	(10 Hours)
Relational Query Languages: Relational Operations. Relational Algebra, Selection and projection set operations, renaming, Joins, Division, Examples of Algebra overviews, Relational calculus, Tuple relational Calculus, Domain relational calculus, Extended relation algebra operation	
UNIT:3	(10 Hours)
Normalization: Introduction, non-loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyce-Codd normal form. Higher Normal Forms - Introduction, Multi-valued dependencies and fourth normal form, Join dependencies and fifth normal form	
UNIT:4	(10 Hours)
Transaction Concept: Transaction properties (ACID), Transaction State, Schedules, Serializability (Conflict Serializability and View Serializability), Need for Concurrency, Concurrency Control- Lock based control, time stamping Protocol, Two Phase Locking, Dead lock in DBMS	
Recovery and Atomicity: Log Based Recovery, Transaction Logs and Shadow Paging, Types of Recovery Techniques in DBMS, Rollback/Undo Recovery Technique, Commit/Redo Recovery Technique, Checkpoint Recovery, Backup Techniques	
UNIT:5	(6 Hours)
Detailed Storage Architecture: Storage Strategies: Detailed Storage Architecture, Storing Data, Magnetic Disk, RAID, Other Disks, Magnetic Tape, Storage Access, File & Record Organization, File Organizations & Indexes, Order Indices, B+ Tree Index Files, Hashing Data Dictionary	
Teaching Methods: Chalk& Board/ PPT/Video Lectures	
Text Books:	
1. Sudarshan, Korth: Database System Concepts, 6th edition, McGraw-Hill Education 2. Elmasari&Navathe: Fundamentals of Database System, Pearson Education.	
Reference Books:	
1. Elmasari&Navathe: Fundamentals of Database System, Pearson Education. 2. Ramakrishnan: Database Management Systems, McGraw-Hill Education. 3. Andrew S. Tanenbaum: Modern Operating Systems, 3rd Edition, Pearson Education. 4. Terry Dawson, Olaf Kirch: Linux Network Administrator's Guide, 3rd Edition O'Reilly	