PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY (Autonomous)

KANURU, VIJAYAWADA

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PRINCIPLES OF DATABASE MANAGEMENT SYSTEMS

(Minor in CSE)

Course Code	23CS5501	**Year**	III	**Semester**	I
Course Category	Minor	**Branch**	ECE,EEE, MECH	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Basic Mathematics and Programming skills
Continuous Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	**Understand** the basic concepts of database management systems	**L2**
CO2	**Apply** the ER model, Relational algebra and SQL operations to solve database-related problems.	**L3**
CO3	**Apply** Normalization techniques and Transaction management concepts to enhance the efficiency of database design.	**L3**
CO4	**Analyze** real-world scenarios to design databases using conceptual models, relational models and normalization.	**L4**

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	✓												
CO2												✓	
CO3		✓											
CO4			✓										

SYLLABUS		
Unit No	**Contents**	**Mapped CO**
I	**Introduction to Databases:** Characteristics of the Database Approach, Advantages of using the DBMS Approach, A Brief History of Database Applications. **Overview of Database Languages and Architectures:** Data Models, Schemas and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, Database System environment, Centralized and Client-Server Architecture for DBMS.	CO1
II	**Conceptual Data Modeling :** High-Level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types. **ER-Diagrams:** Refining the ER Design, ER Diagrams, Naming Conventions and Design Issues.	CO1,CO2,CO4
III	**Relational Model:** The Relational Model Concepts, Relational Model Constraints and Relational Database Schemas. **SQL:** Data Definition, Constraints, Basic Queries and Updates, Views(Virtual Tables) in SQL.	CO1,CO2, CO4
IV	**Database Design Theory and Normalization:** Functional Dependencies, Normal forms based on Primary Keys, General definitions of Second and Third Normal Forms, Boyce-Codd Normal Form **.**	CO1,CO3,CO4
V	**Transaction Processing:** Introduction, Transaction and System Concepts, Desirable Properties of Transactions, Transaction Support in SQL. **Introduction to Concurrency Control:** Two-Phase Locking Techniques for concurrency control- Types of Locks and System Lock Tables.	CO1,CO3

Learning Resources
Text books
1. DATABASE SYSTEMS Models, Languages, Design and Application Programming, Ramez Elmasri, Shamkant B.Navathe, 7th Edition, Pearson.
References
1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, 3rd Edition, TMH. 2. Data base System Concepts, Abraham Silberschatz, Henry F Korth, S.Sudarshan, 5th Edition, McGraw Hill.
E-Resources & other digital material
1. https://nptel.ac.in/courses/106105175