



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**

Autonomous

Siddhartha Nagar, Vijayawada-520010

Re-accredited at 'A+' by the NAAC

Course Code				23CAMIL231			
Title of the Course				DATA BASE MANAGEMENT SYSTEMS			
Offered to: (Programme/s)				BA HONS (Economics)			
L	4	T	0	P	2	C	3
Year of Introduction:		2024-25		Semester:			3
Course Category:		Minor Theory		Course Relates to:		GLOBAL	
Year of Introduction:		2024 - 2025		Percentage:		NA	
Type of the Course:				Skill Development / Employment			
Crosscutting Issues of the Course :							
Pre-requisites, if any				Basic knowledge in computers			

Course Description:

This course provides an in-depth introduction to DBMS. Students will explore the fundamental concepts and techniques for designing, implementing, and managing databases.

Course Aims & Objectives:

S. No	COURSE OBJECTIVES
1	An ability to apply Knowledge of computing and mathematics in Computer Science.
2	An ability to analyse a problem, identify and define the computing requirements appropriate to its solution.
3	An ability to design, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations.
4	An ability to conduct investigations, interpret data and provide conclusions in investigating complex problems related to Computer Science.
5	<i>An ability to engage in continuing professional development and life-long learning.</i>

Course Outcomes:

At the end of the course, the student will / will be...

NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Having Ability to apply Knowledge of computing and mathematics in Computer Science.	K3	1,2	
CO2	Having ability to analyse a problem, identify and define the computing requirements appropriate to its solution.	K4	1,2	
CO3	An ability to create, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations.	K6	1,2	
CO4	An ability to evaluate investigations, interpret data and provide conclusions	K5		

	in investigating complex problems related to Computer Science.		1,2	
CO5	An ability to understand continuing professional development and life-long learning.	K2	1,2	

For BTL: K1: Remember; K2: Understand; K3: Apply; K4: Analyze; K5: Evaluate; K6: Create

CO-PO-PSO MATRIX

CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	1	2							
CO2	2	1							
CO3	1	2							
CO4	2	2							
CO5	2	2							

Use the codes 3, 2, 1 for High, Moderate and Low correlation Between CO-PO-PSO respectively
Course Structure:

Unit – I (Overview of Database systems & Data Models) (7 Hrs.)

Introduction: Database system, Characteristics (Database Vs File System), Database Users, Advantages of Database systems, Database applications.

Data Models: Introduction; types of data models, Concepts of Schema, Instance and data independence, Three tier schema architecture for data independence; Database system structure.

Description :

Databases describe the differences between Database systems and File based systems. It also studies database models and their advantages and dis-advantages. Database system architecture is designed at different levels.

Learning Outcomes:

Explain the basic concepts of database and file system with its applications, types of data models, database system structure and architecture.

Exercises/Projects:

Draw the architecture for the database structure.

Special Resources: (web)

Introduction to Database Systems by Prof. Srineevasa Kumar, IIT Madras

<https://archive.nptel.ac.in/courses/106/106/106106220/>

Unit – II (Relational Model) (10 Hrs.)

Relational Model: Introduction to relational model, Codd's rules, concepts of domain, attribute, tuple, relation, constraints (Domain, Key constraints, integrity constraints) and their importance.

Normalization: Purpose of Normalization or schema refinement, normal forms based on functional dependency(1NF, 2NF and 3 NF), Boyce-codd normal form(BCNF).

Description:

Describe Relational model and normalization for database design for reducing redundancy in data with the help of several normalization techniques.

Learning Outcomes:

Explain the relational model and normalization techniques for database design in database system.

Exercises/Projects:

Draw the relational database model with a real time example.

Special Resources: (web)

Normalization Techniques by Dr. Ganapathy Krishnamurthy , IIT Madras

<https://www.youtube.com/watch?v=9rjJDHAKitY>

Unit – III (Entity Relationship Model) (10 Hrs.)

Entity Relationship Model: Introduction, Representation of entities, attributes, entity set, relationship, relationship set, constraints, sub classes, super class, inheritance, specialisation, generalisation using ER Diagrams.

BASIC SQL: Database schema, data types, DDL operations (create, alter, drop, rename), DML operations (insert, delete, update), basic SQL querying (select and project) using where clause, arithmetic & logical operations, aggregation.

Description:

Entity Relationship is examined in data storage and query processing using SQL. It helps in create, maintain and manipulate a relational database using SQL.

Learning Outcomes:

Explain the Relationship model with its constraints using real time examples.

Exercises/Projects:

Draw the structure of specialisation and generalisation.

Special Resources: (web)

Entity Relationship Model, Prof. N. L. Sarada, IIT Bombay

<https://www.youtube.com/watch?v=WSNqcYqByFk>

Unit – IV (Functions in SQL) (8 Hrs.)

SQL: Nested queries/ subqueries, implementation of different types of joins, SQL functions (Date, Numeric, String, Conversion functions), Creating tables with relationship, implementation of key and integrity constraints, views.

Description:

SQL queries try to work on different types of data to convert some sample data to information and implementation of key and integrity constraints.

Learning Outcomes:

Explain the implementation of key and integrity constraints and functions in SQL.

Exercises/Projects:

Draw the structure of the join and its types with suitable examples.

Special Resources: (web)

Joins and its types, N. Praveen Kumar, IIT Kanpur

<https://www.youtube.com/watch?v=a-MELgvfGdQ>

Unit – V (Structures in PL/SQL) (10 Hrs.)

PL/SQL: Introduction , Structure , Control Structures , Cursors , Procedure , Function , Packages ,Exception Handling.

Description:

Programming Language using SQL and concepts on cursors, control structures, procedures, functions, packages and exception handling.

Learning Outcomes:

Explain the concepts on cursors, control structures, procedures, functions and packages.

Exercises/Projects:

Draw the structure of exception handling.

Special Resources: (web)

PL/SQL Programming by Prof. Srineevasa Kumar, IIT Madras

<https://www.youtube.com/watch?v=jb-7jDate8w>

Specific Resources:

Text Books:

1. **Database Management Systems, 3rd Edition , Raghurama Krishnan, Johannes Gehrke, TMH**
2. **Database System Concepts,5th Edition , Silberschatz, Korth, TMH**

Web Resources:

C:/Users/cscdept/Downloads/Ramakrishnan%20-%20Database%20Management%20Systems%203rd%20Edition.pdf

Prof. Partha Pratim Das,Department of Computer science and Engineering,IIT Kharagpur.

https://www.youtube.com/watch?v=OMHbGm9SQuE&list=PLZ2ps_7DhBYc4jkUk_yQAjYEVFzVzhdU&index=1



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SEMESTER -END QUESTION PAPER STRUCTURE

Course Code & Title of the Course:	23CAMIL231 : Database Management Systems
Offered to:	B. A Hons (Economics)
Category: Major	SEMESTER: 3
Max. Marks	70
Max.Time	3 Hrs

Section A: Short Answer Questions (20 Marks)

Answer All questions. Each question carries 4 Marks.

- 1 A) What are the differences between data and information. (K1)
(OR)
B) Write a short note on evolution of data models. (k2)
- 2 A). Write about CODD'S rules? (k2)
(OR)
B). Explain about functional dependency in dbms? (k1)
- 3 A) Explain about ER model (k1)
(OR)
B) Write about DML operations. (k2)
- 4 A) Explain different types of Aggregate functions in SQL. (k1)
(OR)
B) Write a short note on views in SQL. (k2)
- 5 A) Explain Structure of PL/SQL (k1)
(OR)
B) Explain Functions in PL/SQL (k1)

Section B: Long Answer Questions (50 Marks)

Answer All questions. Each question carries 10 Marks.

- 6 A) Explain the characteristics and advantages of DBMS? (k2)
(OR)
B) Explain briefly about the architecture of DBMS. (k2)
- 7 A) Explain key and integrity constraints with an example? (k2)
(OR)
B). What is normalization? Explain with an example upto 3NF? (k2)
- 8 A) Write a short note on specialisation and generalisation. (k2)
(OR)

- 9 B) What is DML and DDL ? Explain its operations with suitable examples. (k1)
A) Explain joins and its types with example (k2)
(OR)
B). Explain views in SQL with syntax and examples. (k2)
- 10 A) Discuss about iterative control statements available in PL/SQL with syntax and examples.(k3)
(OR)
B). Explain exception handling in PL/SQL (k3)