K L Deemed to be University
Department of Artificial Intelligence and Data Science -- KLVZA
Course Handout
2025-2026, Odd Sem

Course Title	:DATABASE MANAGEMENT SYSTEMS
Course Code	:24AD2103
L-T-P-S Structure	: 3-0-2-0
Pre-requisite	:
Credits	: 4
Course Coordinator	:Veeraswamy Ammisetty
Team of Instructors	:
Teaching Associates	:

Syllabus : Data Modelling: Importance of Databases, File Systems and limitations. Introduction to DBMS, foundations of Databases, difference between File system and DBMS, Functions of DBMS, Environment of DBMS. Three level Architecture of Data. Data Independence and Data Model (Hierarchical, Network, Entity-Relationship, Relational Model, Object-Oriented and NOSQL Models). ER Modeling: Components of ER Model- Entity, Relationship. Types of Entities, Enhanced Entity Relationship Model- Generalization and Specialization, Properties-Union, Overlap, disjoint. Relational Data Model: Understanding the concepts of Relation, Schema, Tuple and Constraints. Integrity Rules. Conversion of ER Model to Relation Model. Query Construction: Introduction to SQL, Data Types, SQL Building Blocks, Referential integrity Constraints (Keys), DDL/DML/DQL/DCL/TCL commands, Where Clause, Operations, Joins, Views, Indexes and Types of Indexes, Relational Algebra: Relational Algebra Operators, Selection Operator, Projection Operator and Set Theory Operators. Database Normalization: Key Attributes: Study of Super, Candidate, Closure of an Attribute Set, Steps to find closure, Finding Candidate Keys of Given Relation. Database Anomaly: Insertion, Deletion and Updation Anomalies with Examples. Guidelines for better Design of a Relational Database: Concept of Functional Dependency, Types of Functional Dependencies. Amstrong Rules. Need for Normalization and Guidelines for designing a strong database. Normal forms 1NF, 2NF, 3NF, BCNF,4N 5NF with suitable Examples. PL/SQL Concepts: Block Structure, Control Structures, Cursors, Triggers, Functions, Procedures and Packages. Transaction Management: Need for Transaction Management. ACID Properties, Transaction States, Need for Concurrency Control (Dirty Read Problem, Unrepeatable Read Problem, Lost Update Problem). Schedules: Types of Schedules, Serializability in DBMS, Problems on Conflict Serializability, View Serializability. Concurrency Control: Lock-Based Protocols, Timestamp Ordering Protocol and Validation Based Protocol and Deadlocks. Indexing: Understanding the purpose of database Indexing, Primary Indexing (Dense & Sparse), Clustered Indexing, Secondary Indexing. Study of B+ Tree Indexing and Hash Indexing, Relational Query Optimization – Transacting SQL queries – Estimating the cost – Equivalence Rules.

Text Books : Database Systems Concepts, Abraham Silberschatz, Henry Korth, S. Sudarshan, McGraw-Hill Education,2014. Introduction to Database Management Systems, R. Elmasri, Shamkant B. Navathe, Pearson Education,2016 PL/SQL Programming for Oracle, Steven Feuerstein, Bill Pribyl, O'Reilly Media, 2011.

Reference Books : Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis.G, 2006 Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education (India) Private Limited, 3rd Edition Peter Rob & Carlos Coronel, Database Systems design, Implementation, and Management, 7th Edition, Pearson Education, 2000.

MOOCS :https://www.coursera.org/professional-certificates/meta-database-engineer https://www.coursera.org/professional-certificates/meta-database-engineer https://learn.mongodb.com/pages/mongodb-associate-developer-exam https://www.geeksforgeeks.org/introduction-to-nosql/

COURSE OUTCOMES (COs):

CO NO	Course Outcome (CO)	PO/PSO	Blooms Taxonomy Level (BTL)
CO1	Develop a database solution by applying DBMS architecture concepts and modeling the data using an ER diagram.	PO1,PO2,PSO1	3
CO2	Construct database solutions by using SQL for data management and Relational Algebra for query representation.	PO3,PO11,PSO1	3
CO3	Apply normalization rules to database design for efficient and consistent data storage.	PO3,PO9,PSO1	4
CO4	Operate database systems using indexing, query tuning, and concurrency control for improved data retrieval and transaction handling.	PO9,PO11,PSO1	4
CO5	Design and implement practical database solutions to solve real-world problems using appropriate database management system technologies and best practices.	PO3,PO5,PSO1	4

COURSE OUTCOME INDICATORS (COIs)::

Outcome No.	Highest BTL	COI-2	COI-3	COI-4
CO1	3	**Btl-2** Interpret DBMS architecture principles to construct an ER diagram for data modeling and outline the steps to design a functional database solution.	**Btl-3** Implement DBMS architecture concepts to design an ER diagram for data modeling and build a comprehensive database solution.	
CO2	3	**Btl-2** Illustrate the use of SQL in managing databases and interpret query expressions through Relational Algebra.	**Btl-3** Build effective database solutions through SQL and execute query operations using Relational Algebra.	
CO3	4	**Btl-2** Interpret the purpose of normalization rules in achieving consistent and optimized data storage.	**Btl-3** Apply normalization principles to develop a well-structured database that ensures reliable data storage.	**Btl-4** Analyze relational schemas using functional dependencies and attribute closures to identify anomalies, determine candidate keys, and evaluate the effectiveness of normalization up to 5NF for

				robust database design.
CO4	4	**Btl-2** Summarize the role of indexing, query tuning, and concurrency control in improving database performance.	**Btl-3** Utilize indexing, query tuning, and concurrency control techniques to manage database systems for enhanced data retrieval and effective transaction processing.	**Btl-4** Evaluate the role of indexing and concurrency control techniques in improving database responsiveness and consistency.
CO5	4			**Btl-4** Analyze real-world problems to develop and deploy effective database solutions by selecting suitable database management system technologies and applying industry best practices.

PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES (POs/PSOs)

Po No.	Program Outcome
PO3	Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
PO5	Modern Tool Usage:Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PSO1	An ability to design and develop Artificial Intelligence technology into innovative products for solving real world problems.

Lecture Course DELIVERY Plan:

Sess.No.	CO	COI	Topic	Book No[CH No] [Page No]	Teaching-Learning Methods	EvaluationComponents
1	CO1	COI-2	Introduction to Data Modelling,DBMS	1	PPT,Talk	End Semester Exam,SEM-EXAM1
2	CO1	COI-2	Three-Level Architecture of Data, Data Independence	1	PPT,Talk	End Semester Exam,SEM-EXAM1
3	CO1	COI-2	Data Models	1	PPT,Talk	End Semester Exam,SEM-EXAM1
4	CO1	COI-2	ER Modeling Basics, Types of Entities	1	PPT,Talk	End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
5	CO1	COI-2	Enhanced ER Model, Properties: Union, Overlap, Disjoint	1	PPT,Talk	ALM,End Semester Exam,Home Assignment,SEM-EXAM1
6	CO1	COI-2	Relational Data Model, Constraints and Integrity Rules	1	PPT,Talk	End Semester Exam,SEM-EXAM1
7	CO1	COI-3	ER to Relational Model Conversion	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM1
8	CO2	COI-2	Introduction to SQL, SQL Building Block	1	PPT,Talk	End Semester Exam,SEM-EXAM1
9	CO2	COI-3	SQL Building Blocks	1	PPT,Talk	End Semester Exam,SEM-EXAM1
10	CO2	COI-2	Referential Integrity & Keys	1	PPT,Talk	End Semester Exam,SEM-EXAM1
11	CO2	COI-2	SQL Command Categories	1	PPT,Talk	End Semester Exam,SEM-EXAM1
12	CO2	COI-3	Query Filtering & Conditions	1	PPT,Talk	ALM,End Semester Exam,Home Assignment,SEM-EXAM1
13	CO2	COI-3	Advanced SQL Operations	1	PPT,Talk	End Semester Exam,SEM-EXAM1
14	CO2	COI-2	Relational Algebra Basics	1	PPT,Talk	End Semester Exam,SEM-EXAM1
15	CO2	COI-3	Set Operations & Review	1	PPT,Talk	End Semester Exam,SEM-EXAM1
16	CO2	COI-2	Key Attributes	1	PPT,Talk	End Semester Exam,SEM-EXAM1
17	CO2	COI-3	Finding Candidate Keys, Database Anomalies	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
18	CO2	COI-2	Functional Dependency, Types of Functional Dependencies	1	PPT,Talk	End Semester Exam,SEM-EXAM1
19	CO3	COI-2	Armstrong's Axioms, Better Design Guidelines	1	PPT,Talk	End Semester Exam,SEM-EXAM2
20	CO3	COI-2	Need for Normalization, 1NF, 2NF	1	PPT,Talk	End Semester Exam,SEM-EXAM2
21	CO3	COI-3	3NF and BCNF, Normalization Case Study	1	PPT,Talk	ALM,End Semester Exam,Home Assignment,SEM-EXAM2
22	CO3	COI-3	4NF and 5NF, Review & Practice Session	1	PPT,Talk	End Semester Exam,SEM-EXAM2
23	CO3	COI-3	Introduction to PL/SQL, Control Structures	1	PPT,Talk	End Semester Exam,SEM-EXAM2
24	CO4	COI-3	Introduction to PL/SQL, Control Structures	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2
25	CO3	COI-3	Functions and Procedures,Packages in PL/SQL	1	PPT,Talk	End Semester Exam,SEM-EXAM2
26	CO4	COI-2	Introduction to Transaction Management, ACID Properties	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2
27	CO4	COI-2	Transaction States, Need for Concurrency Control	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2
28	CO4	COI-3	Schedules in DBMS, Conflict Serializability	1	PPT,Talk	ALM,End Semester Exam,Home Assignment,SEM-EXAM2
29	CO4	COI-3	View Serializability, Problems on Serializability	1	PPT,Talk	End Semester Exam,SEM-EXAM2
30	CO4	COI-3	Concurrency Control Mechanisms	1	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
31	CO4	COI-3	Timestamp Ordering Protocol, Validation-Based Protocol	1	PPT,Talk	End Semester Exam,SEM-EXAM2
32	CO4	COI-3	Deadlocks in DBMS	2	PPT,Talk	End Semester Exam,SEM-EXAM2
33	CO4	COI-3	Indexing in DBMS, Primary Indexing	2	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2
34	CO4	COI-3	Secondary and Clustered,Indexing B+ Tree Indexing	2	PPT,Talk	End Semester Exam,SEM-EXAM2
35	CO4	COI-3	Hash Indexing Relational Query Optimization	2	PPT,Talk	End Semester Exam,SEM-EXAM2
36	CO4	COI-4	Query Optimization Techniques	2	PPT,Talk	ALM,End Semester Exam,SEM-EXAM2
37	CO4	COI-3	Transacting SQL queries	1	PPT,Talk	End Semester Exam,SEM-EXAM2
38	CO4	COI-3	Estimating the cost for Query Optimization	1	PPT,Talk	End Semester Exam,SEM-EXAM2
39	CO4	COI-3	Equivalence Rules	1	PPT,Talk	End Semester Exam,SEM-EXAM2

Lecture Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Summarize the purpose and components of a DBMS and describe how data modeling helps structure data logically.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Basic Concepts of Data Modelling,Data Models Overview	2	PPT	--- NOT APPLICABLE

20	File System vs. DBMS	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Summarize the purpose of each level in the three-level architecture and identify how data independence is maintained between them

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Three Levels of Data Abstraction	2	PPT	--- NOT APPLICABLE ---
20	Data Independence	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Classify different data models based on their structure and discuss their advantages and limitations

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Types of Data Models	2	PPT	--- NOT APPLICABLE ---
20	Comparison of Data Models	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Understand the principles of ER modeling by describing how different entity types contribute to accurate data representation.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Components of ER Model: Entities, Attributes, Relationships	2	PPT	--- NOT APPLICABLE ---
20	Cardinality and Participation Constraints	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Discuss the role of union, overlap, and disjoint constraints in structuring entity hierarchies within Enhanced ER models.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Introduction to Enhanced ER Model	2	PPT	Think / Pair / Share
20	Inheritance and Subclass/Superclass relationships	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Illustrate the concepts of relational schema and tuples and discuss how constraints uphold data consistency across relations.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods

5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Relational Data Model	2	PPT	--- NOT APPLICABLE ---
20	Constraints and Integrity Rules	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Identify the mapping of ER model constructs into relational database structures and summarize the conversion process

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Conversion of Basic ER Components to Relational Model	3	PPT	Case Study
20	Conversion of Specialization, Generalization, and Aggregation	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Summarize the role of SQL in database management and explain its basic syntax and operations for data definition and manipulation.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Introduction to SQL (Structured Query Language)	2	PPT	--- NOT APPLICABLE ---

20	SQL Building Blocks	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Summarize the structure of an SQL query

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Construct data manipulation queries using INSERT, UPDATE, and DELETE	3	PPT	--- NOT APPLICABLE ---
20	Retrieve and filter data using SELECT with various conditions	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 The purpose of primary keys, foreign keys, and unique keys.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Keys in the Relational Model	2	PPT	--- NOT APPLICABLE ---
20	Referential Integrity in Relational Databases	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 DDL, DML, DCL, and TCL commands with appropriate examples

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	SQL: DDL and DML Commands	2	PPT	--- NOT APPLICABLE ---
20	SQL: DCL and TCL Commands	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 conditional operators (=, !=, >, <, BETWEEN, IN, LIKE, IS NULL) are used to filter data.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	SQL Query Filtering: Basic Conditions	3	PPT	Brain Stroming
20	Advanced SQL Filtering and Conditional Logic	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 1 JOIN operations (INNER, LEFT, RIGHT, FULL) combine data from multiple tables.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---

20	SQL Joins and Subqueries	3	PPT	--- NOT APPLICABLE ---
20	SQL Set Operations, Views, and Indexes	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 14

Session Outcome: 1 relational algebra operations: selection (σ), projection (π), union (∪), set difference (−), Cartesian product (×), and rename (ρ).

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Core Operations in Relational Algebra	2	PPT	--- NOT APPLICABLE ---
20	Advanced Operations in Relational Algebra	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 15

Session Outcome: 1 Basic set operations such as UNION, INTERSECT, and EXCEPT (or MINUS)

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Set Operations in SQL	3	PPT	--- NOT APPLICABLE ---
20	Relational Algebra vs SQL query design	3	PPT	--- NOT APPLICABLE ---

5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 16

Session Outcome: 1 Summarize the importance of key attributes in maintaining data integrity.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Fundamentals of Keys in the Relational Model	2	PPT	--- NOT APPLICABLE ---
20	Composite and Foreign Keys in Relational Design	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 17

Session Outcome: 1 Illustrate common database anomalies such as insertion, update, and deletion anomalies.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Identification of Candidate Keys in Relational Schemas	3	PPT	Leading question
20	Understanding and Identifying Database Anomalies	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 18

Session Outcome: 1 Interpret how functional dependencies affect database normalization.

Time(min)	Topic	BTL	Teaching-Learning	Active Learning

			Methods	Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Basics of Functional Dependency in Relational Databases	2	PPT	--- NOT APPLICABLE ---
20	Classification of Functional Dependencies	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 19

Session Outcome: 1 Armstrong's Axioms and describe guidelines for better database design to ensure data integrity and reduce redundancy.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Armstrong's Axioms and Inference of Functional Dependencies	2	PPT	--- NOT APPLICABLE ---
20	Best Practices and Guidelines for Better Database Design	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 20

Session Outcome: 1 describe the concepts and rules of First Normal Form (1NF) and Second Normal Form (2NF) in database design.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Introduction to Normalization and First Normal Form	2	PPT	--- NOT APPLICABLE ---

20	Second Normal Form: Concepts and Conversion	2	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 21

Session Outcome: 1 principles of Third Normal Form (3NF) and Boyce-Codd Normal Form (BCNF) and apply them to analyze and resolve normalization case studies.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
30	Advanced Normal Forms: 3NF and BCNF	3	PPT	Group Discussion
10	Applying Normalization in Real-World Scenarios	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 22

Session Outcome: 1 Fourth Normal Form (4NF) and Fifth Normal Form (5NF) and apply these concepts in review and practice exercises to reinforce database normalization skills.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Multivalued and Join Dependencies: 4NF & 5NF	3	PPT	--- NOT APPLICABLE ---
20	Normalization Review and Hands-on Practice	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 23

Session Outcome: 1 Apply PL/SQL programming concepts and control structures to develop procedural code for managing data

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Declare and use variables in a PL/SQL block	3	PPT	--- NOT APPLICABLE ---
20	Control Flow and Decision-Making in PL/SQL	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 24

Session Outcome: 1 PL/SQL programs using control structures such as loops and conditional statements to solve database-related problems.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Introduction to PL/SQL	2	PPT	Fish Bowl
20	Control Structures PL/SQL	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 25

Session Outcome: 1 Develop and implement PL/SQL functions, procedures, and packages to modularize and optimize database programming tasks.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---

20	Functions in PL/SQL	3	PPT	--- NOT APPLICABLE ---
20	Procedures ,Packages PL/SQL	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 26

Session Outcome: 1 Transaction Management, ACID Properties

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Introduction to Transaction Management	2	PPT	--- NOT APPLICABLE ---
20	ACID Properties	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 27

Session Outcome: 1 transaction states and describe the need for concurrency control to maintain data

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Transaction States	2	PPT	--- NOT APPLICABLE ---
20	Need for Concurrency Control	2	PPT	--- NOT APPLICABLE ---

5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 28

Session Outcome: 1 Different types of schedules in DBMS and describe the concept of conflict serializability to ensure transaction correctness

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Schedules in DBMS	3	PPT	--- NOT APPLICABLE ---
20	Conflict Serializability	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 29

Session Outcome: 1 concept of view serializability and analyze common problems related to serializability in database transactions.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	View Serializability	3	PPT	--- NOT APPLICABLE ---
20	Problems on Serializability	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 30

Session Outcome: 1 Interpret the impact of concurrency control on transaction performance.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Concurrency Control Mechanisms	3	PPT	One minute paper
20	Concurrency Control Protocols	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 31

Session Outcome: 1 concepts and working principles of timestamp ordering and validation-based protocols for concurrency control in database systems.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Timestamp Ordering Protocol	3	PPT	--- NOT APPLICABLE ---
20	Validation-Based Protocol	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 32

Session Outcome: 1 concept of deadlocks in DBMS, including their causes, detection methods, and strategies for prevention and resolution.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---

20	Deadlocks in DBMS	3	PPT	--- NOT APPLICABLE ---
20	Deadlocks prevention in transactions	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 33

Session Outcome: 1 Structure and functioning of primary indexing to improve query performance

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Indexing in DBMS	3	PPT	Peer Review
20	Primary Indexing	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 34

Session Outcome: 1 Secondary and Clustered,Indexing B+ Tree Indexing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Secondary Indexing	3	PPT	--- NOT APPLICABLE ---
20	Clustered Indexing	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 35

Session Outcome: 1 Hash Indexing Relational Query Optimization

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Hash Indexing	3	PPT	--- NOT APPLICABLE ---
20	Relational Query Optimization	3	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 36

Session Outcome: 1 Query Optimization Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Architecture of Query Optimization Techniques	4	PPT	--- NOT APPLICABLE ---
20	Advantages and Disadvantages of Query Optimization	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 37

Session Outcome: 1 Implement multi-step transactions ensuring data consistency using COMMIT and ROLLBACK commands with error control

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---

20	BEGIN, COMMIT, ROLLBACK, SAVEPOINT Explanation	3	PPT	--- NOT APPLICABLE ---
20	data retrieval, filtering, updates, joins, and transaction handling using appropriate constraints and ACID properties	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 38

Session Outcome: 1 query execution strategies using cost-based optimization techniques to select the most efficient query plan

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Query Plan Analysis	3	PPT	--- NOT APPLICABLE ---
20	Optimizer Decision Making with EXPLAIN Commands	3	PPT	--- NOT APPLICABLE ---
5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 39

Session Outcome: 1 Apply equivalence rules of relational algebra to transform and optimize queries while preserving the correctness and semantics of the original query

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
20	Equivalence Rules Application procedure	3	PPT	--- NOT APPLICABLE ---
20	Logical Query Plan Transformation	3	PPT	--- NOT APPLICABLE ---

5	Summary of the Session	2	PPT	--- NOT APPLICABLE ---

Tutorial Course DELIVERY Plan: NO Delivery Plan Exists

Tutorial Session wise Teaching – Learning Plan

No Session Plans Exists

Practical Course DELIVERY Plan:

Tutorial Session no	Topics	CO-Mapping
1	Designing an Entity-Relationship (ER) Diagram and translating it into a Relational Database Schema.	CO5
2	Design an Entity-Relationship (ER) Diagram and translate it into a relational database schema-II	CO5
3	Apply database concepts by installing a DBMS, creating a database, defining tables, and implementing constraints using appropriate Data Definition Language (DDL) commands.	CO5
4	Create the SQL Schema and Perform DML Operations	CO5
5	Apply SQL querying techniques by using SELECT statements with filters and performing inner and outer joins to retrieve and combine data from multiple related tables.	CO5
6	Develop basic PL/SQL blocks implementing control structures, variables, and procedural logic within the database.	CO5
7	Apply PL/pgSQL programming concepts to develop and implement procedures, functions, and triggers in a Bank Management System for handling transactions and data operations efficiently.	CO5
8	Implement concurrency control mechanisms to ensure ACID properties	CO5
9	Analyze the effectiveness of different index types by creating indexes on a dataset, measuring query performance, and evaluating their impact on data retrieval efficiency.	CO5
10	Analyze execution plans, identify performance bottlenecks, and optimize queries for efficiency	CO5

Tutorial Session no	Topics	CO-Mapping
11	Apply query optimization techniques in a Library Management System to improve the performance of SQL queries and ensure efficient data retrieval.	CO5
12	Analyze data requirements to design an effective NoSQL schema, model the data structure, and evaluate the use of CRUD operations in a NoSQL database such as MongoDB for optimized data management.	CO5

Practical Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 ER Modeling & Mapping

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 ER Modeling & Mapping case study-II

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---

30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Database Creation & Management

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Data Manipulation & Views

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 JOIN OPERATIONS IN SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Develop the PL/SQL blocks using PostgreSQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 PL/pgSQL in a Bank Management System

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---

45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Implement concurrency control mechanisms to ensure ACID properties

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	PPT	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	PPT	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Indexing Experimentation

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---

20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Query Optimization

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Query Optimization in a Library Management System

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Design NoSQL Schema using MongoDB

Time(min)	Topic	BTL	Teaching-	Active

			Learning Methods	Learning Methods
5	Attendance	1	Talk	--- NOT APPLICABLE ---
45	Experiment Explanation	3	LTC	--- NOT APPLICABLE ---
30	Execution of Lab Experiment	3	LTC	--- NOT APPLICABLE ---
20	Assessment and Viva-Voice	4	LTC	--- NOT APPLICABLE ---

Skilling Course DELIVERY Plan: NO Delivery Plan Exists

Skilling Session wise Teaching – Learning Plan

No Session Plans Exists

WEEKLY HOMEWORK ASSIGNMENTS/ PROBLEM SETS/OPEN ENDEDED PROBLEM-SOLVING EXERCISES etc:

Week	Assignment Type	Assignment No	Topic	Details	co
5	Weekly Homework Assignments	1	A university database maintains information about Persons, who can be Students, Faculty, or Staff. Each of these subtypes has distinct attributes: Student: student_id, program, year Faculty: faculty_id, department, rank Staff: staff_id, position, salary The university wants to model this using an Enhanced ER (EER) diagram. Tasks: a) Draw the Enhanced ER diagram representing this scenario. b) Apply and justify the use of either Union, Overlap, or Disjoint constraints in your model. c) Convert the EER diagram to relational schemas using appropriate mapping strategies.	ER Diagrams	CO1
12	Weekly Homework Assignments	2	Consider the following schema for a Retail Store Database: Customer(cust_id, name, city) Product(prod_id, name, category, price) Orders(order_id, cust_id,	Applying complex filtering, logical operators, and SQL techniques	CO2

			order_date) OrderDetails(order_id, prod_id, quantity) Write SQL queries for the following tasks. Apply complex filtering conditions and logical operators effectively. a) Retrieve the names of customers who have never ordered any product from the 'Electronics' category. b) List the product IDs and names of those products that were ordered more than 3 times by customers from 'Delhi' or 'Mumbai', but not in the year 2023. c) Find all customers who have placed at least two orders in the same month, and their total quantity ordered in that month exceeds 10. d) Display the top 3 most frequently ordered products in each product category, sorted by order frequency (quantity). e) Identify customers who placed an order that includes both a product from 'Grocery' and one from 'Home Appliances' in the same order.		
21	Weekly Homework Assignments	3	A company maintains a Sales Database with the following unnormalized relation: Sales(sale_id, customer_name, customer_phone, product_id, product_name, category, unit_price, quantity, sales_date, region_manager, manager_contact) You are asked to analyze and normalize this schema based on the following business rules: Each product_id uniquely identifies a product_name and category. Each customer_name can have multiple phone numbers. Each region_manager manages multiple regions but can have only one contact number. A customer can make multiple purchases of the same product on different dates. Tasks: a) Identify all the functional dependencies present in the above relation. b) Identify the candidate keys. c) Decompose the relation step-by-step into 3NF, clearly stating the reasons for each decomposition. d) Check whether your final 3NF tables are in BCNF. If not, further decompose them into BCNF with	Normalization	CO3

			justification. e) Draw a diagram or tabular representation of the final normalized schema.		
28	Weekly Homework Assignments	4	Consider the following schedule S involving three transactions T1, T2, and T3: S: R1(X), R2(Y), W1(Y), R3(X), W2(X), R1(Y), W3(Y), R2(X) Tasks: a) Construct the precedence (serializability) graph for the above schedule. b) Determine whether the schedule S is conflict-serializable. If yes, provide an equivalent conflict-serial schedule. c) If the schedule is not conflict-serializable, explain why and identify the conflicting operations. d) Identify all read-write, write-read, and write-write conflicts in the schedule. e) Modify the schedule minimally to make it conflict-serializable, and justify the changes.	serializability Concepts	CO4

COURSE TIME TABLE:

	Hour	1	2	3	4	5	6	7	8	9
Day	Component									
Mon	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Tue	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Wed	Theory	---	---	---	---	---	---	V-S124,V-S125,V-S126	---	---
	Tutorial	---	---	---	---	---	---	--	---	---
	Lab	---	---	---	---	---	---	--	---	---
	Skilling	---	---	---	---	---	---	--	---	---
Thu	Theory	---	---	---	---	---	---	V-S221,V-S222	---	---
	Tutorial	---	---	---	---	---	---	--	---	---
	Lab	---	---	---	---	---	---	--	---	---
	Skilling	---	---	---	---	---	---	--	---	---
Fri	Theory	---	---	---	---	V-S126	V-S126	---	---	---

	Tutorial	---	---	---	---	--	--	---	---	---
	Lab	---	---	---	---	V-S124,V-S124,V-S124,V-S125,V-S125,V-S125	V-S124,V-S124,V-S124,V-S125,V-S125,V-S125	---	---	---
	Skilling	---	---	---	---	--	--	---	---	---
Sat	Theory	---	---	---	---	V-S221	V-S221	---	---	---
	Tutorial	---	---	---	---	--	--	---	---	---
	Lab	---	---	---	---	V-S222,V-S222,V-S222	V-S222,V-S222,V-S222	---	---	---
	Skilling	---	---	---	---	--	--	---	---	---
Sun	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--

REMEDIAL CLASSES:

Supplement course handout, which may perhaps include special lectures and discussions that would be planned, and schedule notified according

SELF-LEARNING:

Assignments to promote self-learning, survey of contents from multiple sources.

S.no	Topics	CO	ALM	References/MOOCS

DELIVERY DETAILS OF CONTENT BEYOND SYLLABUS:

Content beyond syllabus covered (if any) should be delivered to all students that would be planned, and schedule notified accordingly.

S.no	Advanced Topics, Additional Reading, Research papers and any	CO	ALM	References/MOOCS

EVALUATION PLAN:

Evaluation Type	Evaluation Component	Weightage/ Marks		Assessment Dates	Duration (Hours)	CO1	CO2	CO3	CO4	CO5
End Semester Summative Evaluation Total= 40 %	**Lab End Semester Exam**	Weightage	16		90					16
		Max Marks	50							50
	End Semester Exam	Weightage	24		180	6	6	6	6	
		Max Marks	100			25	25	25	25	
In Semester	**Continuous**	Weightage	10		90					10

Formative Evaluation Total= 24 %	**Evaluation - Lab Exercise**	Max Marks	50							50
	Home Assignment and Textbook	Weightage	6		90	1.5	1.5	1.5	1.5	
		Max Marks	100			25	25	25	25	
	ALM	Weightage	8		90	2	2	2	2	
		Max Marks	100			25	25	25	25	
In Semester Summative Evaluation Total= 36 %	**Lab In Semester Exam**	Weightage	8		90					8
		Max Marks	50							50
	Semester in Exam-II	Weightage	14		90			7	7	
		Max Marks	50					25	25	
	Semester in Exam-I	Weightage	14		90	7	7			
		Max Marks	50			25	25			

ATTENDANCE POLICY:

Every student is expected to be responsible for regularity of his/her attendance in class rooms and laboratories, to appear in scheduled tests and examinations and fulfill all other tasks assigned to him/her in every course
In every course, student has to maintain a minimum of 85% attendance to be eligible for appearing in Semester end examination of the course, for cases of medical issues and other unavoidable circumstances the students will be condoned if their attendance is between 75% to 85% in every course, subjected to submission of medical certificates, medical case file and other needful documental proof to the concerned departments

DETENTION POLICY :

In any course, a student has to maintain a minimum of 85% attendance and In-Semester Examinations to be eligible for appearing to the Semester End Examination, failing to fulfill these conditions will deem such student to have been detained in that course.

PLAGIARISM POLICY :

Supplement course handout, which may perhaps include special lectures and discussions

COURSE TEAM MEMBERS, CHAMBER CONSULTATION HOURS AND CHAMBER VENUE DETAILS:

Supplement course handout, which may perhaps include special lectures and discussions

Name of Faculty	Delivery Component of Faculty	Sections of Faculty	Chamber Consultation Day (s)	Chamber Consultation Timings for each day	Chamber Consultation Room No:	Signature of Course faculty:
Venkateswara Rao Peddada	P	222-B	-	-	-	-

Vijaya Babu Burra	L	221-MA	-	-	-	-
Vijaya Babu Burra	P	221-A	-	-	-	-
Pradeepini Gera	L	126-MA,222-MA	-	-	-	-
Pradeepini Gera	P	222-A,126-A	-	-	-	-
Arpita Roy	P	126-C	-	-	-	-
MALLESH MARDANPALLY PEDDA	P	222-C	-	-	-	-
S V SURESH BABU MATLA	P	126-B	-	-	-	-
KAMBALA KUMAR	P	125-C,221-B	-	-	-	-
Aruna Kolukulapalli	P	124-C	-	-	-	-
Lakshmi Thota	L	124-MA	-	-	-	-
Lakshmi Thota	P	124-A	-	-	-	-
Ramarao NAYAPAMU	P	125-B	-	-	-	-
Radhika Peeriga	P	124-B	-	-	-	-
kolliboyina hari	P	221-C	-	-	-	-
SUMALATHA KANAPARTHI	L	125-MA	-	-	-	-
SUMALATHA KANAPARTHI	P	125-A	-	-	-	-

GENERAL INSTRUCTIONS

Students should come prepared for classes and carry the text book(s) or material(s) as prescribed by the Course Faculty to the class.

NOTICES

Most of the notices are available on the LMS platform.

All notices will be communicated through the institution email.

All notices concerning the course will be displayed on the respective Notice Boards.

Signature of COURSE COORDINATOR

(Veeraswamy Ammisetty)

Signature of Department Prof. Incharge Academics & Vetting Team Member

Department Of AI&DS

HEAD OF DEPARTMENT:

Approval from: DEAN-ACADEMICS
(Sign with Office Seal) [object HTMLDivElement]