

Teaching Plan (January 2025 - June 2025)

Department of Information Technology
LCB College, Maligaon, Guwahati

Paper Code: CIT-DBMS
Paper Title: Database Management System
Instructor: Mr. Abhijit Choudhury
Programme: NEP-BCA
Semester: 4
Credits: 3 (Theory) + 1 (Practical)
Total Hours: 60 (45 Theory + 15 Practical)

UNIT 1: Introduction to DBMS (5 Lectures)

Lecture No.	Topic	Mode of Teaching	of	Assessment Method
01	Introduction to Data, Information, Meta-data, Data Dictionary	Classroom ICT	+	Quiz
02	Database, DBMS, Components, Functions	Classroom ICT	+	
03	Traditional File Systems vs DBMS	Classroom ICT	+	
04	Database Users, Applications	Classroom ICT	+	
05	Role & Responsibilities of DBA	Classroom ICT	+	

UNIT 2: DBMS Architecture (6 Lectures)

06	Schemas, Sub-schemas, Instances	Classroom ICT	+	Sessional Exam 1
07	Data Independence	Classroom ICT	+	
08	Three-tier Architecture	Classroom ICT	+	
09	Types and Characteristics of Data Models	Classroom ICT	+	
10	Record-based, Object-based, Physical Models	Classroom ICT	+	
11	Types of Database Systems	Classroom ICT	+	

UNIT 3: E-R Modeling (8 Lectures)

12	Entities, Attributes, Domains	Classroom ICT	+	Assignment
13	Types of Attributes	Classroom ICT	+	
14	Entity Sets: Strong & Weak	Classroom ICT	+	
15	Relationships & Their Types	Classroom ICT	+	
16	Mapping Constraints	Classroom ICT	+	
17	Keys: Primary, Super, Foreign, etc.	Classroom ICT	+	
18	ER Diagrams & Symbols	Classroom ICT	+	
19	Converting ER Diagrams to Tables	Classroom ICT	+	

UNIT 4: Relational Model & Relational Algebra (7 Lectures)

20	Structure of Relations	Classroom ICT	+	Class Test
21	Integrity Constraints	Classroom ICT	+	
22	Advantages and Disadvantages of Relational Model	Classroom ICT	+	
23	Relational Algebra: Basic Operators	Classroom ICT	+	
24	Join Operations	Classroom ICT	+	
25	Set Operations, Division	Classroom ICT	+	
26	Aggregate Functions in Relational Algebra	Classroom ICT	+	

UNIT 5: Functional Dependency & Normalization (8 Lectures)

27	Functional Dependencies	Classroom ICT	+	Sessional Exam 2
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28	Armstrong's Axioms, Attribute Closure	Classroom ICT	+	
29	Canonical Cover	Classroom ICT	+	
30	Anomalies in Databases	Classroom ICT	+	
31	Normalization Concepts & Benefits	Classroom ICT	+	
32	1NF and 2NF	Classroom ICT	+	
33	3NF and BCNF	Classroom ICT	+	
34	Practice on Normal Forms	Classroom ICT	+	

UNIT 6: Transactions and Concurrency (4 Lectures)

35	Transactions and ACID Properties	Classroom ICT	+	Quiz
36	Transaction States	Classroom ICT	+	
37	Concurrency Control & Issues	Classroom ICT	+	
38	Serializability (View & Conflict)	Classroom ICT	+	

UNIT 7: SQL Queries (7 Lectures)

39	SQL Basics, DDL Statements	Classroom ICT	+	Final Review
40	SQL Constraints	Classroom ICT	+	
41	DML Operations (SELECT, INSERT, etc.)	Classroom ICT	+	
42	SQL Clauses: WHERE, GROUP BY, etc.	Classroom ICT	+	
43	SQL JOIN Operations	Classroom ICT	+	
44	Aggregate Functions	Classroom ICT	+	
45	Practice & Mock Test	Classroom ICT	+	Final Evaluation

Practical Sessions (15 Hours)

Lab No.	Task	Mode of Teaching	Assessment Method
1	Basic DDL Operations	Lab + Explanation	Practical Test
2	DML Commands (Insert, Delete)	Lab + Demo	
3	Constraints Implementation	Lab	
4	SQL Clauses (WHERE, GROUP BY, etc.)	Lab	
5	Aggregate Functions	Lab	
6	Join Operations	Lab	
7	Transaction Commands (START, COMMIT, ROLLBACK)	Lab	
8	Case Study: DB Design with ER Diagram	Lab Supervision	Final Practical Evaluation
9	Mini Project Phase 1	Lab Supervision	
10	Mini Project Phase 2	Lab Supervision	