Indraprastha College for Women
University of Delhi

Work Plan for ODD SEMESTER – 2025

Course Name:	B.A.(P.)
Paper Title:	Database Management System
Unique Paper Code:	2342573501
Semester:	5
Faculty(s):	Dr Ritu Singhal
Year:	2025

Work Plan

Unit No.	Learning Objective	Lecture No.	Topics to be Covered
Unit 1	**Introduction to Database**	1-2	Introduction to Database: Purpose of database system, Characteristics of database approach, data models,
Unit 1	**Understand Database Management System Structure**	3-5	database management system, database system architecture, three-schema architecture, components of DBMS, data Independence, and file system approach vs database system approach.
Unit 2	**Entity Relationship (ER) Modeling**	6-9	Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types,
Unit 2	**Entity Relationship (ER) Modeling**	10-12	Constraints on the relationship, Entity Relationship diagram notation.
Unit 3	**Relational Data Model**	13-15	Update anomalies, Relational Data Model - Concept of relations, schema-instance distinction, keys,
Unit 3	**Relational Data Model**	16-19	Relational integrity constraints, referential integrity and foreign keys, relational algebra operators and queries.

Unit 4	**Structured Query Language (SQL)**	20-25	Querying in SQL, DDL to create database and tables, table constraints, update database-update behaviours,
Unit 4	**Structured Query Language (SQL)**	26-31	DML, aggregation functions, group by and having clauses, retrieve data from the database, generate and query views. Access and manipulate databases using ODBC. Basic Database administration SQL commands.
Unit 5	**Database Design**	32-37	: Mapping an Entity Relationship (ER) model to relational database, functional dependencies
Unit 5	**Database Design**	38-41	Normal forms-1NF, 2NF, 3NF and BCNF decompositions and desirable properties of them.
Unit 6	**Data Storage and Indexes**	42-45	Need for file indexes, file organizations, index structures, single- and multi-level indexing, concurrent execution of transactions, ACID properties

Unit	Contents/Syllabus
I	Introduction to Database: Purpose of database system, Characteristics of database approach, data models, database management system, database system architecture, three-schema architecture, components of DBMS, data independence, and file system approach vs database system approach.
II	Entity Relationship (ER) Modeling: conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, constraints on relationship, Entity Relationship diagram notation.
III	Relational Data Model: Update anomalies, Relational Data Model - Concept of relations, schema-instance distinction, keys, relational integrity constraints, referential integrity and foreign keys, relational algebra operators and queries.
IV	Structured Query Language (SQL): Querying in SQL, DDL to create database and tables, table constraints, update database-update behaviours, DML, aggregation functions group by and having clauses, retrieve data from the database, generate and query views. Access and manipulate databases using ODBC. Basic Database administration SQL commands.
V	Database Design: Mapping an Entity Relationship (ER) model to relational database, functional dependencies and Normal forms, 1NF, 2NF, 3NF and BCNF decompositions and desirable properties of them.
VI	Data Storage and Indexes: Need of file indexes, file organizations, index structures, single and multi-level indexing, concurrent execution of transactions, ACID properties

S. No.	Name of Authors/Books/Publishers
1.	Elmasri, R., Navathe, B. S., Fundamentals of Database Systems, 7th Edition, Pearson Education, 2015.
2.	Krogh, J. W. MySQL Connector/Python Revealed: SQL and NoSQL Data Storage Using MySQL for Python Programmers, Apress, 2018.
3	Murach J., Murach's MySQL, 3th Edition, Pearson, 2019.
	Additional References (i) Ramakrishnan, R., Gehrke J. Database Management Systems, 3rd Edition, McGraw-Hill, 2014. (ii) Silberschatz, A., Korth, H. F., Sudarshan S. Database System Concepts, 7th Edition, McGraw Hill, 2019. (iii) Connolly, T. M., Begg, C. E. Database Systems: A Practical Approach to Design, Implementation, and Management, 6th edition, Pearson, 2019.

	Paper Components		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**
4	**3**	**0**	**1**
Assessment Scheme			
S.No.	**Component**	**Marking Scheme**	**Total Marks**
1	Internal Assessment		**30**
	• Assignment/Quiz/Project/ Presentation	12	
	• Class Test	12	
	• Attendance	06	
2.	Continuous Assessment (**Tutorial)**	-	
	• Activity 1		
	• Activity 2		
	• Attendance		
3.	Practical		40
	• Continuous Assessment	10	
	• End Term Written/Practical Exam	20	
	• Viva	10	

4.	End Semester Examination	90