Department of Computer Engineering & Applications
GLA University, Mathura
Teaching cum Learning Delivery Plan

Course: B.Tech CSE	Year: II

Subject Name & Code: Database Management System (BCSC1003)

Name of Faculty: Total No of Lectures: 40

Lect	Module	Topic	Pre Reading Material	Sub Topic	Methodology	Learning Outcomes(Chapter wise)	
1	1	Introduction	https://www.geeksforgeeks.org/introduction-of-dbms-database-management-system-set-1/https://	Introduction: An Overview of Database Management System, Database System vs File System	PPT	Students will be able to Understanding the fundamental concepts of databases, data models, and the need for database systems in modern applications.	
2	1		https://cs.uwaterloo.ca/~tozsu/courses/CS338/lectures/14%20DB%20System.pdf	Database System Concept and Architecture	PPT		
3	1		https://www.javatpoint.com/data-models	Data Models	PPT		
4	1		https://www.geeksforgeeks.org/difference-between-schema-and-instance-in-dbms/ https	Schema and Instances, Database Language and Interfaces (DDL, DML, DCL)	PPT Cum Board	Students will be able to define database schema and database instances. Students will be able to identify Structure Query Language statements used in creation and manipulation of database.	
5	1		https://laura-malovich.medium.com/the-different-steps-in-database-development-life-cycle-aa79c	Database Development Life Cycle (DDLC) with Case Studies	PPT	Students will be able to understand the various aspects of database development life cycle.	
6	2	Data Modeling Using the Enti	https://www.geeksforgeeks.org/introduction-of-er-model/	ER Model Concepts, Notation for ER Diagram	PPT Cum Board	Students will be able to conceptualize the database design. It will help to identify the entities, attributes, and relationships in database, and then map them to tables and columns.	
7	2		https://www.educba.com/mapping-constraints-in-dbms/, https://prepinsta.com/dbms/mapping-constraints/	Mapping Constraints	PPT Cum Board	Students will learn essential skills and knowledge to build robust, well-organized, and secure databases with the knowledge of mapping constraints.	
8	2		https://www.javatpoint.com/dbms-keys, https://byjus.com/gate/types-of-keys-in-dbms/	Keys	PPT Cum Board	Students will learn the concepts of keys and gain skills to design database as keys are crucial for data integrity, security etc.	
9	2		https://www.educba.com/specialization-in-dbms/, https://www.educba.com/generalization-in-dbms/https://www.educba.com/aggregation-in-dbms/	Specialization and generalization, Aggregation	PPT Cum Board	Students will learn how to create specialised entities or subclass that inherits attributes from a more generalised entity in a database. Students will also learn how to abstract common attributes from multiple specialized entities into a more generalized entity or superclass.Students will be able to summarize vast amounts of data into meaningful and concise results as they will learn how to aggregate entities in a database effectively.	
10	2		https://youtu.be/-CuY5ADwn24	Reduction of an ER Diagram to Tables	PPT Cum Board	Students will be able to design or analyze relational databases used in business processes.	
11	2		https://youtu.be/YiMpUhZ92JE	Extended ER Model.	PPT Cum Board	Students will be able to identify the data requirements and constraints of your system, such as what entities and attributes are needed, how they are related, and what rules or conditions apply.	
12	3	Relational Data Model and Language:	https://youtu.be/Q45sr5p_NmQ https://youtu.be/rnGeA8C6-K4	Relational Data Model Concepts, Integrity Constraints	PPT Cum Board	Students will be able to learn basic concepts of relational data model , able to store data for real life scenario in organized form. Students will be able to specify rules forn data in a realtional databses.	
13	3		https://www.scaler.com/topics/dbms/integrity-constraints-in-dbms/	Entity Integrity, Referential Integrity, Domain Constraints	PPT/ Chalk & Board	Students will be able to understand the fundamental concepts of Entity Integrity, Referential Integrity, and Domain Constraints in the context of database management systems.	
14	3		https://www.guru99.com/dbms-keys.html#:~:text=Super%20Key%20%E2%80%93%20A%20supe	Keys Constraints, Primary Key, Foreign Key, Candidate Key, Super Key,	PPT/Chalk & Board	Students will be able to Define the concept of keys in the context of database management systems and explain their importance in ensuring data integrity and uniqueness. will be able to differentiate between different types of keys, such as Primary Key, Foreign Key, Candidate Key, and Super Key, and understand their specific roles and functionalities.	
15	3		https://www.geeksforgeeks.org/introduction-of-relational-algebra-in-dbms/	Relational Algebra: Basic RA Operators - Select, Project, Union, Intersection,	PPT/ Chalk & Board	Students will learn concept of RA opertors with implementation	
16	3		https://www.geeksforgeeks.org/cartesian-product-operation-in-relational-algebra/ https://www.tuto	Minus, Cartesian Product, Division operation, Rename and assignment operator	PPT /Chalk & Board	Students will able to understand the how cartesian and minus opration will performed. Students will able to understand the how division and assignement oprerator works as well as renaming operation.	
17	3		https://www.geeksforgeeks.org/sql-join-set-1-inner-left-right-and-full-joins/	Extended RA Operators - , Natural Join, Theta Join, Equi Join	PPT /Chalk & Board	Students will learn about various joins and implementaion	
18	3		https://www.geeksforgeeks.org/sql-join-set-1-inner-left-right-and-full-joins/	Outer Joins (Left, Right, Full),	PPT /Chalk & Board	Students will learn all types of outer joins with example	
19	4	Database Design & Normalization I	https://www.youtube.com/watch?v=YD8dhOmuVnY	Functional Dependencies	PPT+ Chalk/Board	Students will learn to ensure the same data doesn't exist repetitively across a database or network of databases. Maintain the quality and integrity of data.	
20	4		https://www.codingninjas.com/studio/library/canonical-cover	Canonical Cover		Students will learn to remove functional dependencies while preserving the same meaning and integrity constraints.	
21	4		https://www.geeksforgeeks.org/normal-forms-in-dbms/	Normal Forms, First, Second,		Students will learn to elimintae redunandant data, minimize data modification errors, and simplfy the query process.	
22	4		https://www.geeksforgeeks.org/difference-between-3nf-and-bcnf-in-dbms/	Third Normal Forms, BCNF			

		Normalization I					
23	4		https://www.geeksforgeeks.org/lossless-join-and-dependency-preserving-decomposition/	Lossless Join and Dependency Preserving Decomposition,	PPT+ Chalk/Board	student will learn concept of Lossless Join and Dependency Preserving Decomposition,	
24	4		https://www.tutorialspoint.com/multivalued-dependency-and-fourth-normal-form	MVD and 4th Normal Form		students will learn to identify & eliminate redundancy & anomalies	
25	4		https://www.geeksforgeeks.org/introduction-of-4th-and-5th-normal-form-in-dbms/ https://www.java	JD and 5th Normal Form, Inclusion Dependence.		students will learn inclusion dependence by using Multivalued dependency and join dependency	
26	5	**Database Design & Normalization II**	https://m.youtube.com/watch?v=H0ZYyGIBLRY&list=PLG9aCp4uE-s0bu-l8fgDXXhVLO4qVROG	Indexing	PPT cum Chalk & Board	Students will learn the knowledge and skills to design, implement, and optimize indexing strategies, leading to improved query performance and more efficient database management.	
27	5		https://www.scaler.com/topics/dbms/indexing-in-dbms/	Structure of Index files and Types (primary , secondary and clustering)	PPT cum Chalk & Board	Understanding different index types empowers students to improve query performance and database management.	
28	5		https://www.analyticsvidhya.com/blog/2021/06/understand-the-concept-of-indexing-in-depth/#:~:te	Dense and Sparse Indexing	PPT cum Chalk & Board	Students will learn to make decisions for index selection and implementation in databases. They gain insights into performance trade-offs and design efficient solutions.	
29	6		https://www.geeksforgeeks.org/transaction-management/	Transaction System	PPT cum Chalk & Board	learners will gain a thorough understanding of how to manage data consistency and reliability.	
30	6		https://www.scaler.com/topics/dbms/serializability-in-dbms/	Testing of Serializability, Serializability of Schedules,	PPT cum Chalk & Board	Students will able to test whether the given schedule is serializable or not.	
31	6	**Transaction Processing Concept:**	https://www.geeksforgeeks.org/conflict-serializability-in-dbms/	Conflict & View Serializable Schedule	PPT cum Chalk & Board	Students will learn that how to ensure consistency of the database in non serial environment.	
32	6		https://www.geeksforgeeks.org/database-recovery-techniques-in-dbms/	Recoverability, Recovery from Transaction Failures	PPT	Students will learn recovery techniques which ensure data integrity and consistency and prevent data loss.	
33	6		https://youtu.be/0YhOYqPeq0g	Log Based Recovery	PPT	Students will able to understand the how log based recovery is essential.	
34	6		https://youtu.be/lz66t1uyYIM	Deadlock Handling.	PPT	Students will learn about Deadlock concepts and ways to handle it	
35	7		https://www.youtube.com/watch?v=fTRF3cr10RQ	Concurrency Control,	PPT	idea about concurrency control its need and problem with concurrent access	
36	7	**Concurrency Control Techniques**	https://www.youtube.com/watch?v=1pUaEDNLWi4	Locking Techniques for Concurrency Control, 2PL,	PPT	student learn how to deal with concurrency through locks	
37	7		https://www.youtube.com/watch?v=27NtGV1vNoY https://www.youtube.com/watch?v=ziXlQHa_t8	Time Stamping Protocols for Concurrency Control, Validation Based Protocol.	PPT	student learn shortcomings of locks and use timestamp to deal with it. student learn how validation based protocol works	
38	8		https://www.google.com/search?q=what+is+distributed+database+videos+youtube&tbm=vid&sou	Introduction of Distributed Database	PPT	Students will be able to know: what is Distributed database, How it is different from Centralized DB, Why and where it is needed, what are the goals and challenges of DDBMS.	
39	8	**Distributed Database:**	https://www.google.com/search?q=fragmentation+distributed+database&biw=1215&bih=554&tbm	Data Fragmentation	PPT cum Chalk & Board	Students will be able to understand what is Fragmentation, Why and Where it is needed and what are it's type.	
40	8		https://www.google.com/search?q=replication+distributed+database&biw=1215&bih=554&tbm=vi	Data Replication	PPT cum Chalk & Board	Students will be able to understand what is Replication, Why and Where it is needed.	