

Guru Tegh Bahadur Institute of Technology, New Delhi

Lesson Plan for (Database Management Systems)

Course Name: B.Tech. (CSE)

Semester: 4th

SUB CODE: CIC-210

Week No & Dates	Topic Details	No of Hours Planned	Metho dology	Reference/text book
1.	Unit-I: Basic concepts: database & database users, characteristics of the database systems, concepts and architecture, date models, schemas & instances DBMS architecture & data independence, database languages & interfaces data modelling using the entity-relationship approach. Enhanced ER concepts - Specialization/Generalization, Aggregation, Mapping of ER model to Relational Model	1 1 2 2	L L,A L L,A	T1, R2,T3 R2,T3 R2,T1,T3 R2,T3
2.	DDL, DCL & DML views and indexes in SQL. Basics of SQL, DDL, DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator	4	L	R2,T3 R2,T3
3.	Relational model concepts, relational model constraints, relational algebra, relational calculus	5	L, T	R2,T1

4.	SQL – Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations subqueries, correlated subqueries, Use of group by, having, order by, join and its types, Exist, Any, All , view and its types. Transaction control commands – Commit, Rollback, Save point.	2	L	T3
		5	L,T	T3
5.	Queries related to Relational Algebra SQL – A Relational Database Language, Data Definition in SQL: SQL Queries: The form of a basic SQL query, Union, intersect, and except,	1	L,T,A	T1, R2
		1		R2, T3
6.	Relational data base design: functional dependencies & normalization for relational databases normal forms based on functional dependencies, (1NF, 2NF, 3NF & BCNF), lossless join and dependency preserving decomposition, normal forms based on multivalued & join dependencies (4NF & 5NF) & domain key normal form	1	L	T1
		5	L,T	T1
7.	Properties of Transaction, Transaction states, Transaction Schedule, Serializability, Concurrency	1	L	T1, R1
		2	L,T	T1, R1

	control techniques, locking techniques, time stamp ordering, Recoverable schedules, granularity of data items, Deadlock detection and Recovery, recovery techniques: recovery concepts, database backup and recovery from catastrophic failures.	1 2	L L	T1, R1 R1, R2, R4
8	Database Programming – control structures, exception handling, stored procedures, Triggers	2	L,A	R6, R7
9.	File Structures and Indexing: Secondary Storage Devices, Operations on Files, Heap Files, Sorted Files, Hashing, Single level indexes, Multi-level indexes, B and B+ tree indexes. Concepts of Object Oriented Database Management systems & Distributed Database Management Systems	2 2	L,T,A	R4,R5

*Methodology used:

Lecture (L)

Tutorial (T)

Assignment (A)

Text Books:

1. R. Elmsari and S. B. Navathe, “Fundamentals of database systems”, Pearson Education, 7th Edition, 2018
2. V. M. Grippa and S. Kumichev, “Learning MySQL”, O’Reilly, 2021.
3. SQL/ PL/SQL, The programming language of Oracle, Ivan Bayross, 4th Edition BPB Publications

References:

1. A. Silberschatz, H. F. Korth and S. Sudershan, “Database System Concept”, McGraw Hill, 6th Edition, 2013.
2. Date, C. J., “An introduction to database systems”, 8th Edition, Pearson Education, 2008.
3. P. Rob & C. Coronel, “Database Systems: Design Implementation & Management”, Thomson Learning, 6th Edition, 2004
4. Desai, B., “An introduction to database concepts”, Galgotia publications, 2010
5. H. Garcia-Molina, J. D. Ullman, J. Widom, “Database System: The Complete Book”, PH.
6. Joel Murach, Murach's Mysql”, 3rd Edition-Mike Murach and Associates, Incorporated, 2019.
7. Oracle and MySQL manuals

Websites:

1. <http://www.w3schools.com/sql/default.asp>
2. www.cs.iit.edu/~cs561/cs425/algebra/home.html
3. http://en.wikipedia.org/wiki/Database_normalization
4. <http://www.sql-tutorial.net/>
5. info.cba.ksu.edu/skovar/greatplains/normalization.doc
6. en.wikipedia.org/wiki/Entity-relationship_model
7. <http://nptel.iitm.ac.in/video.php?courseId=1071>