DETAILED SYLLABUS

UNIT - I Database Systems and Data modeling **14 HOURS**

1.1 Database systems: Database Management System – Characteristics of Database Components of Database - Functions of Database - Understanding database model- Evolution – Types of database models: Hierarchical Database Model, Network Database Model, Relational Database Model.

1.2 Types of Databases: Transactional Databases, Decision Support Databases and Hybrid Databases – Open Source databases .

1.3 Relational data model: CODD's rules – Components of RDBMS - Table structure - Records ,rows, tuples , attributes. - Keys : Primary, Foreign , Composite, unique keys – Meta Data – Data Dictionary. - Data Integrity - Data Constraints and validation : Types of Constraints Difference between SQL and MYSQL

1.4 ER Diagram and Normalization: Methodologies of Designing Database- Entities-Relationships (1:1, 1 : many and many : many) - ER Diagram – Samples .
Normalization : Benefits – Normal Forms - 1st Normal Form, 2nd Normal Form , 3rd Normal Form

1.5 Database Administration : Server/client And Distributed concept: DBA Tasks – DBA Tools/utilities – Data Base Maintenance – Backup and Recovery.

UNIT-II MySQL Administration & Database Design **15 HOURS**

2.1 Installation of MySQL:Features of MySQL- Download, Installing, Starting & Stopping connections to the MySQL server – Accessing MySQL – Command Line, Web Interface (PHP Myadmin) and Desktop Tools (MySQL workbench).

2.2 Working with MySQL Databases : Creating (CREATE cmd), selecting (USE cmd) And describing database (DESC cmd)- SHOW cmd - backing up databases.

2.3 Introduction to MySQL : MySQL data types –Data Definition Commands: creating, altering, renaming, copying and deleting tables - temporary tables – Data manipulation commands : Insert, update & deleting rows. Data retrieval commands. MySQL Operators and Expressions : Types of operators –Arithmetic, comparison & logical operators - Pattern matching - Import and Export of data

2.4 Built-in Functions: Single row functions - Aggregate functions – Conversion functions

2.5 Querying the table: Selecting rows using Where , Order by , group by & Having clauses. Sub-queries – operators used in sub-queries - correlated sub-queries

2.6 Flow control : IF(), IF NULL(),CASE,LOOP,LEAVE,ITERATE,REPEAT,WHILE

UNIT- III MySQL Performance Tuning **11 HOURS**

3.1 Indexes and sequences: Creating index– primary key (single & multiple field) & foreign key, unique key, composite keys, full text indexing, leftmost indexing -dropping index.-Sequences: creating, altering and deleting sequences.

3.2 Performing multiple table retrieval using Joins & Unions: Joins – definition – aliasing – Types of Joins: natural join, inner join, self-join, left join, right join.
Unions: Definition – Types – Union, Union ALL, Union Distinct – order by and LIMIT handling.

3.3 Views: Introduction – Advantages of Views- creating Views, Updating the Views, Deleting the Views.

3.4 User & Transaction management: creating users, deleting users, renaming users, grant & revoke commands - Transactions – committing & rollback transactions – save points.

UNIT- IV Storage Engines, Stored Program concept , Optimization & API's

14 HOURS

4.1 Storage Engines: MySQL Storage engines-Choosing the right engine - Types of storage engines - MyISAM, InnoDB & Memory – Features – Advantages and disadvantages of storage engines .

4.2 Stored Procedures & Functions: Definition - Creating stored Procedures – Invoking - Dropping procedures -Creating and calling stored functions – Deleting stored functions - Advantages.

4.3 MySQL trigger & Cursor : Use of trigger - Creating triggers - Types of trigger – Deleting triggers – Cursor – creation – deletion.

4.4 MySQL Optimizations: Query optimization using EXPLAIN command.

4.5 MySQL and web: Need for own MySQL programs – MySQL's Application Programming Interfaces.

UNIT - V Data warehousing & Introduction to Big data **11 HOURS**

5.1 Data warehousing : Functions of Warehouse – Architecture – Applications – Data mining concepts.- Advantages.

5.2 Big Data : Definition – Characteristics – Various Technologies used - Applications - Overview of NoSQL : Difference between RDBMS and NoSQL – Tools used in Big Data, Scalability, Understanding storage architecture .

5.3 Types of Data stores in NoSQL: Column oriented data store, Document Store, Key value Store & Graph store - create, access, update and delete data - Querying NoSQL Stores. Using NoSQL in the cloud - Amazon Simple DB

REFERENCES :

Sl.No.	Title	Author	Publisher
1.	MySQL	Paul DuBios	Addison Wesley (Fourth Edition)
2.	Database System Concepts	Silber Schatz A. and Korth H	McGraw Hill Education (India) Pvt Limited, Sixth Edition
3.	Murach's MySQL	Joel Murach	Shroff / Murach(2012)
4.	NO SQL Distilled	PRAMOD J. SADALAGE MARTIN FOWLER	Addison Wesley (First Edition)