

COURSE TITLE : DATA BASE MANAGEMENT SYSTEM
COURSE CODE : 3132
COURSE CATEGORY : B/E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 60
CREDITS : 4

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Database Systems	15
2	Database Design	15
3	Structured Query Language	15
4	Normalisation and Transactions	15

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	To Understand Database systems
2	1	To Understand Database Design
3	1	To Understand SQL
4	1	To Understand Emerging Technologies

Specific Outcomes:

MODULE – I Database systems

- 1.1 To Understand Database systems
 - 1.1.1 Define data, information, field, record, file, and database
 - 1.1.2 Define DBMS
 - 1.1.3 Explain the advantages of DBMS
 - 1.1.4 Describe the applications of DBMS
 - 1.1.5 List the Database Users.
 - 1.1.6 Define instance, schema and subschema
 - 1.1.7 Explain Three Schema architecture with diagram
 - 1.1.8 Explain Data Independence – Logical Data Independence and Physical Data Independence
 - 1.1.9 Describe Conceptual Model, representation and physical model
 - 1.1.10 Explain hierarchical, network and relational models
 - 1.1.11 Describe DBMS Languages – DDL, DML and DCL
 - 1.1.12 Explain Component Modules of DBMS
 - 1.1.13 Centralised and Client-Server Database Systems

MODULE – II Database Design

- 2.1 To Understand Database Design
 - 2.1.1 Explain Relational model concepts
 - 2.1.2 Define Domains, Attributes, Tuples, Instances, relations and relational schema
 - 2.1.3 Explain Keys – Super key, candidate key, composite key, primary key and foreign key
 - 2.1.4 Explain E-R Model with example
 - 2.1.5 Discuss the features of Enhanced E-R diagram
 - 2.1.6 Explain Relational Algebra and fundamental operations
 - 2.1.7 Explain Additional Operations - Natural-Join, Outer Join
 - 2.1.8 Explain the mapping of E-R model to relational model

MODULE – III Structured Query Language

- 3.1 To Understand SQL
 - 3.1.1 Explain features of SQL
 - 3.1.2 Explain Data types in SQL
 - 3.1.3 Explain CREATE TABLE command with constraints NULL, DEFAULT, CHECK, PRIMARY KEY, UNIQUE, referential Integrity
 - 3.1.4 Explain INSERT, UPDATE and DELETE commands
 - 3.1.5 Explain SELECT statements with WHERE, ORDER BY clause with examples
 - 3.1.6 Describe the use of Aggregate and scalar functions in SELECT statements with examples
 - 3.1.7 Explain SELECT statements with GROUP BY, HAVING clauses with examples
 - 3.1.8 Explain Nested queries, sub queries
 - 3.1.9 Describe DROP TABLE and ALTER TABLE command
 - 3.1.10 Explain what are inner join and outer join
 - 3.1.11 Explain how views are created and used
 - 3.1.12 Explain transactions

- 3.1.13 Describe integrity constraints
- 3.1.14 Explain how index creation is done
- 3.1.15 Explain about authorizations on data and granting & revoking of privileges
- 3.1.16 Explain how to create and use functions, procedure, cursor and trigger
- 3.1.17 Explain Database connectivity using JDBC/ ODBC
- 3.1.18 Explain how to connect to a database

MODULE – IV Emerging Technologies

4.1 To Understand Normalisation

- 4.1.1 State functional dependency
- 4.1.2 Explain the need of normalisation
- 4.1.3 Describe decomposition of a table with examples

4.2 To Understand Emerging Technologies

- 4.2.1 Explain Object Oriented Concepts
- 4.2.2 Describe Object Identity, Object Structure
- 4.2.3 Explain Parallel DBMS.
- 4.2.4 Describe Distributed DBMS
- 4.2.5 Explain Mobile Databases
- 4.2.6 State Data Mining Technology
- 4.2.7 Describe Data Warehousing

CONTENT DETAILS

MODULE – I Database systems

Database Systems – Data – Information – Record – Field – Need of database system - Advantages and Disadvantages - application areas – people who interact with database - Three schema Architecture - Data independence - Data models – Database Schema versus database instance – Component modules of DBMS – Centralised and Client/Server Database Applications – Classification of DBMS.

MODULE – II Database Design

Relational Model Concepts – Domain – Attribute – tuple – instance – relation – relational schema – Keys – E R Model – Enhanced E R diagram – sub class – super class – inheritance – specialisation – generalisation – UML class diagram - Relational Algebra operations - select, project, Union, Set Difference, Cartesian Product and Rename – additional operations - Natural-Join, Outer Join - mapping of E-R model to relational model

MODULE – III Structured Query Language

SQL – Features of SQL – Data types in SQL - CREATE TABLE command, Constraints – NULL, DEFAULT, CHECK, PRIMARY KEY, UNIQUE, referential Integrity – INSERT, UPDATE and DELETE command - SELECT statements with WHERE, ORDER BY clause - Aggregate and scalar functions in SELECT statements - Nested queries, sub queries Statement - Views

Transaction commands – integrity constraints - CREATE INDEX, CREATE UNIQUE INDEX, DROP INDEX - authorizations on data and granting & revoking of privileges - functions, procedure - cursor and trigger - Database connectivity using JDBC/ ODBC

MODULE – IV Emerging Technologies

Normalisation -Functional Dependency - Decomposition — Introduction to Object oriented databases- Features-Object identity- Object Structure. Parallel DBMS - Overview - Architecture - Distributed DBMS - Advantages Mobile Databases - Concept .Databases and Internet.Introduction to Data Mining and Data warehousing.

Text Book(s)

1. Database Systems – Elmasri, Navathe (Pearson) Sixth Edition

REFERENCE

1. Introduction to Database Systems – IIT Education Solutions Ltd – PEARSON- 2010
2. Database system concepts - Silberschatz, Korth, and Sudarshan (TMH)-Sixth Edition
3. SQL for professional - Swapne & Rajesh Naik