Course Code (BCA-CR2102) **Semester-II** **Maximum Marks: 60**
Course Title: DBMS
Total Credits: 04

Course Objective

The objective is to introduce basic database concepts and inculcate the role of a database management system in an organization.

Unit-I

Introduction to DBMS: Definition & Characteristics; Database System Vs File System, Advantages & Disadvantages of DBMS ; DBMS Architectures: 3-Schema Architecture; Data independence; Database Users.

Data models, Schemas and Instances, Hierarchical Data Model, Network Data Model.

File Organizations: Indexed Sequential access, Indexing, Primary Index, Secondary Indexes, Clustering Indexes, Direct File Organization, Multikey Organization.

Unit-II

E-R Modeling: Concept, ER Modeling Notations: Entity set, attributes, Relationships and keys. Relational Data Model; Concept, Relational model Constraints (Entity Integrity, Referential Integrity, Key Constraints, Domain Constraints), CODD'S Rules.

Relational Database Design:
Introducing to Relational Algebra: Fundamental Operations
Concept of Normalization; Functional dependencies; Transitive dependencies, Normal Forms: 1NF, 2NF & 3NF.

Unit-III
SQL Concepts: Basics of SQL: DDL,DML,DCL, SQL Data Types.
DDL Commands: create, alter, drop, truncate
DML Commands: select, insert, delete and update
DCL Commands: grant, revoke
Transaction Control Commands: Commit, Rollback & Savepoint.
Specifying constraints in SQL– Primary key, foreign key, unique, not null, check;
IN operator; Functions - aggregate functions, Built-in functions : numeric, date, string functions, set operations, sub-queries, Use of group by, having, order by, join and its types, view and its types;

Unit-IV

PL/SQL Concepts: Constructs, Basic Programs in PL/SQL, Stored Procedures; Cursors & Database Triggers.

References:
1. **Elmasri, Navathe** "Fundamentals ofDatabase Systems", Pearson Education.
2. **Korth, Silbebschatz**, **Sudarshan**,"Database System Concepts",TMH.
3. **Bipin C. Desai**,"An introduction to Database Systems",Galgotia Publications.
4. **Ivan Byros**,"SQL PL/SQL the programming language of Oracle",BPB.