FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

- **Sem** : 2

- **Subject Code** : 05BC1204

- **Subject** : Database Management System – 1

- **Course Objectives** :

  1. This course is intended to give students basic fundamental knowledge about RDBMS.
  2. This will give conceptual insight about how database design and implementation takes place.
  3. Gives insight about relational operations and use of databases.

- **Prerequisites** : Basics and elementary knowledge of working with the computer.

Unit No	Topics Covered	No of lectures required
1	**Overview to Database Management System** Introduction to Database Management systems, Database-applications, purpose, instance and schema, Data Models, Database System Architecture.	10
2	**Database Design and Normalization** The Entity Relationship Model: The Basic ER concepts, Entities and Attributes, Relationships, constraints, E-R Diagram symbols, Examples of ERD. Introduction to Normalization, First Normal Form, Second Normal Form, Third Normal Form.	12
3	**Interactive SQL :** SQL commands , Data Definition Language Commands, Data Manipulation Language Commands, insertion of data into the tables, Viewing of data into the tables, Deletion operations, updating the contents of the table, modifying the structure of the table, renaming table, destroying tables, Data Constraints, Type of Data Constraint, Column Level Constraint, Table Level Constraint.	10

4	Viewing The Data : Computations on Table Data, Arithmetic Operators, Logical Operators, Comparison Operators, Range Searching, Pattern Searching, ORACLE FUNCTIONS, Number Functions, Group Functions, Scalar Functions, Data Conversion Functions, Manipulating Dates in SQl , Character Functions, Sub queries and Joins : Joins, Equi Joins, Non Equi Joins, Self Joins, Outer Joins, Sub Queries, Correlated Queries, Using Set Operators:- Union , Intersect, Minus.	10
5	Relational Algebra: Native Relational Operations (Selection, Projection, Join, Difference), Relational Algebra Examples.	06

Course Outcomes:

1. To understand various fundamental aspects of database management system.
2. To depict a database system using ER diagram.
3. To understand the uses the database schema and need for normalization.
4. To implement and execute SQL Queries.
5. Query representation using Relational Algebra.

Text Book:

1. "Database System Concepts", Silberschatz, Korth, Sudarshan, 4th Edition, McGraw Hill Publication.
2. "Fundamentals of Database Systems", Elmsari, Navathe, 4th Edition, Pearson Education (2008)
3. "SQL/PLSQL, The Programming Language of ORACLE", Ivan Bayross, BPB Publication
4. "Database Systems Concepts, Design & Applications", S. K. Singh, Pearson Education

Reference Books:

1. "Database Systems : Design, Implementation and Management", Peter Rob, Carlos Coronel, 7th Edition, Cengage Learning (2007)
2. "An Introduction to Database Systems", C J Date, A Kannan, S Swaminathan, 8th Edition, Pearson Education (2006)
3. Database Management Systems, Ramakrishnan, Gehrke, McGraw Hill, Third Edition.
4. "Database management Systems", Leon and Leon, Vikas Publication.

Web References:

1. https://kakeboksen.td.org.uit.no/Database%20System%20Concepts%206th%20edition.pdf
2. https://www.tutorialspoint.com/sql/

App References:

3. https://play.google.com/store/apps/details?id=in.ajaykhatri.learndbms&hl=en_IN
4. https://play.google.com/store/apps/details?id=com.quizmine.androiddbms&hl=en

Syllabus Coverage from text /reference book & web/app reference:

Unit No.	Chapter
1	Text Book – 1, Chapter 1: 1.1, 1.2, 1.3, 1.4, 1.8
2	Text Book – 1 , Chapter 2 : 2.1, 2.2, 2.3, 2.5, 2.6, 2.8 Text Book – 2, Chapter 10: 10.2, 10.3, 10.4
3	Text Book – 3 Chapter 7 and Chapter 8
4	Text Book – 3 Chapter 9 and Chapter 10
5	Text Book – 4 Chapter 4: 4.1, 4.3, 4.4

PRACTICALS

Practical List:

Practical lab sessions conducted based on the following topics:

- Create Table, Viewing and Modifying the structure of tables

- Insertion of Data into tables, Viewing data in the tables

- Delete Operations, Update Operations

- Renaming Tables, Destroying Tables

- Data Constraints, Defining integrity constraints in the alter table command

- Grouping Data from tables

- Arithmetic Operators, Logical Operators

- Range Searching, Pattern Matching

- Column Alias

- Aggregate Functions, Scalar Functions

- Date Conversion Functions, Manipulating dates in SQL

- Subqueries

- Joins

- Set Operators: Union, Intersect and Minus Clause