

**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

**II Year B.A. (CA) / B Com (CA) / B.Sc. (CA), SEMESTER- IV**

**Discipline: COMPUTER APPLICATIONS**

**DATABASE MANAGEMENT SYSTEM**

| Semester  | Course Code | Course Title                      | Hours/Week | Hours     | Credits  |
|-----------|-------------|-----------------------------------|------------|-----------|----------|
| <b>IV</b> | <b>C5</b>   | <b>Database Management System</b> | <b>4</b>   | <b>60</b> | <b>3</b> |

**Model Outcomes for Database Management System**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

*A. Remembers and states in a systematic way (Knowledge)*

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including E-R diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

*B. Explains (Understanding)*

5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
6. Perform PL/SQL programming using concept of control statements

*C. Critically examines, using data and figures (Analysis and Evaluation)*

7. Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model

*D. Working in 'Outside Syllabus Area' under a Co-curricular Activity (Creativity)*

Design and implement a small database project

*E. Construct simple and moderately advanced database queries using Structured Query Language (SQL) (Practical skills)*

## **SYLLABUS**

| <b>Unit</b> | <b>Details</b>  |
|-------------|---|
| <b>I</b>    | <b>Overview of Database Management System</b><br>Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System, services of database system   |
| <b>II</b>   | <b>File-Based System</b><br>File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, DBMS Vendors and their products.   |
| <b>III</b>  | <b>Entity-Relationship Model:</b><br>Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, CODD's Rules, Relational Data Model, Concept of Relational Integrity.   |
| <b>IV</b>   | <b>Structured Query Language</b><br>Introduction, SQL Literals, SQL operators, Commands in SQL, Data types in SQL, Data Definition Language (DDL) commands, Table Modification, Table Truncation, Selection Operation, Projection Operation, Aggregate Functions, Data Manipulation Language commands, Imposition of Constraints, Set Operations. |
| <b>V</b>    | <b>PL/SQL:</b><br>Introduction, Structure of PL/SQL, Data Types of PL/SQL, PL/SQL operators, Steps to Create a PL/SQL Program, Control Structures: conditional control statements, Iterative Control statements   |

### **Learning Resources (Database Management System)**

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#### **References:**

1. Paneerselvam: Database Management system, PHI.
2. MARTIN, Database Management-Prentice Hall of India, New Delhi.
3. Bipin C. Desai, 'An Introduction to Database System', Galgotia Publications
4. Korth, Database Management System.
5. Navathe, Database Management System.
6. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management System
7. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB publications

**Online resources:**

[http:// www.onlinegdb.com/](http://www.onlinegdb.com/)

[http:// www.tutorialspoint.com/](http://www.tutorialspoint.com/)

<http://learnsql.com>

<https://www.codecademy.com/learn/learn-sql/>

<https://www.w3schools.com/sql/default.asp>

**DATABASE MANAGEMENT SYSTEM LAB**

| Semester | Course Code | Course Title                   | Hours/Week | Hours | Credits |
|----------|-------------|--------------------------------|------------|-------|---------|
| IV       | C5-P        | Database Management System Lab | 2          | 30    | 2       |

1. Create a table with constraints so that invalid data should not be entered into the table
2. Create the employee table as shown below and generate queries  
Employee (empno, ename, job, joindate, salary, comm, deptno)
  - i. Display all the rows of employee table
  - ii. List out employee names and their jobs of all employees
  - iii. List employee details who are working as CLERK
  - iv. List employee details whose salary is more than 2500
  - v. Display employee details who is salary between 3000 and 5000
  - vi. Display all employee names in alphabetical order
  - vii. Count number of rows are there in employee table
  - viii. Find sum and average salaries of all employees
  - ix. Find job wise number of employee working and their total salaries
  - x. Find in which job more than 3 employees working
4. Write a PL/SQL program to Find Biggest of Three numbers.
5. PL/SQL program to find whether a number is positive, negative or zero
6. PL/SQL program to find factorial of a number
7. PL/SQL program to calculate simple interest
8. PL/SQL program to retrieve data from a table and display them

**RECOMMENDED CO-CURRICULAR ACTIVITIES:**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity))
5. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

**General**

1. Group Discussion
2. Visit to Software Technology parks / industries

**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs from individual and collaborative work