3/4 B.Tech. FIRST SEMESTER
DATABASE MANAGEMENT SYSTEMS LAB
CS5L2   **Required**   **Credits: 4**
Lecture: --   **Internal assessment: 25 marks**
Lab: 6 periods/week   **Semester end examination: 50 marks**

Course context and Overview: Introduction to Database Management Systems will concentrate on the principles, design, implementation and applications of database management systems.

Prerequisite: DBMS, SQL

Objectives:
   Students should be able to:
   1. Use **Oracle** / MySQL to select, sort and summarize rows and perform transactions
   2. Perform stored procedures & functions
   3. Setup triggers that activate to perform specific data-handling operations when they insert or update table rows.
   4. Develop Programs using Cursors & Packages.

Learning Outcomes:
Ability to:

   1. Design and implement a database schema for a given problem-domain.
   2. Formulate query for a database using SQL DML/DDL commands.
   3. Apply integrity constraints on a database using a state-of-the-art RDBMS.
   4. Develop PL/SQL programs including procedures, stored functions, cursors and packages for data manipulation.

   List of Experiments:

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables.

2. Queries using SELECT command. using ANY, ALL, IN, EXISTS, NOT EXISTS, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class.

3. Nested queries and correlated nested queries (Join, outer join, set operations, ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET)

4. 1) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING.
   2) Creation, dropping of Views and updation thru views..

5. Queries using Conversion functions (to_char, to_number and to_date), string functions(Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr

and instr), date functions (Sysdate, next_day, add_months, last_day, months_ between, least, greatest, trunc, round, to_char, to_date)

6. i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block

7. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.

8. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.

9. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.

10. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.

11. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.

12. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERECURRENT of clause and CURSOR variables.

13. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Learning Resources

TEXT BOOKS:

1. ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, PearsonEducation 3rdEdition.

2. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.

3. SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

4. My SQL Tutorial The fundamentals of working with MySQL,LUKE WELLING ,LURA THOMSON.

5. MySQL Cookbook, 2nd Edition. Solutions & Examples for Database Developers and DBAs. By Paul DuBois. Publisher: O'Reilly Media.