Course Title: Database Management System (3 Cr.)
Course Code: CACS255
Year/Semester: II/IV
Class Load: 6 Hrs./Week (Theory: 3 Hrs., Tutorial: 1 Hr., Practical: 2 Hrs.)

Course Description
This course offers both theoretical as well as practical knowledge of database management system so that students can handle back end of software while developing any types of application packages.

Course Objectives
The general objectives of this subject are to provide the basic concept, theory and practices in design and implementation of DBMS. Students will also be good for handling different type of data transaction by using SQL commands.

Course Contents
Unit 1 Introduction to DBMS
Introduction of Database Management System, Objective of Database Management System, Importance of DBMS, Merit and Demerit of DBMS. Application of DBMS. 3 Hrs.

Unit 2 Database Design, Architecture and Model

Unit 3 Relational Database Model

Unit 4 Database Normalization
Definition and Importance of Normalization, Functional Dependencies. Normalization: 1NF, 2NF, 3NF, BCNF and 4NF. 4 Hrs.

Unit 5 Creating and Altering Database and Tables (SQL)
Introduction to SQL, Creating Database with Different Type of Arguments and Alter Database, Creating Normal Tables and Complex Tables with Different...
Type of Constraints (Key, Check, Default): Alter Tables: Adding and Dropping Attributes and Other Constraints; Drop Statement: Table, Database.

Unit 6 Manipulating and Querying Data
8 Hrs.
Adding Data with INSERT Statement, Retrieving Data with SELECT Statement and FROM Clause and Filter Data with WHERE Clause; Order and Grouping Data with ORDER and GROUP by Clause and Summarizing the Select Statement; Retrieving Data from Different Tables using: INNER JOINS, OUTER JOIN and CROSS JOIN; Building Nested Queries, Manipulate Data Using UPDATE Statement and Removing Rows Using DELETE Statement; Creating and Altering View.

Unit 7 Developing Stored Procedures, DML Triggers and indexing
5 Hrs.
Managing Stored Procedures, Create, Alter, Drop, Execute Stored Procedure, Encryption, Passing Data To Stored Procedures, Parameter Default, Returning Data From Stored Procedure Output Parameter Using The Return Statement; Transaction Flow, Creating Triggers, Triggers Limitation, Disabling Trigger, Developing Multi Row Enabled Triggers; Basic Concept of Indexing, Ordered Indices, Type of Indexing, Multiple Key Access, Creating And Dropping Index.

Unit 8 Query Processing and Security
5 Hrs.

Unit 9 Transaction and Concurrency Control
4 Hrs.

Laboratory Works
Lab works should be done covering all the topics listed above using Oracle and a small project work should be carried out using the concept learnt in this course. Project should be assigned on Individual Basis.

Teaching Methods
The general teaching pedagogy includes class lectures, group discussions, case studies, guest lectures, research work, project work, assignments (theoretical and

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practical), and examinations (written and verbal), depending upon the nature of
the topics. The teaching faculty will determine the choice of teaching pedagogy
as per the need of the topics.

**Evaluation**

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**Text Book**


**Reference Books**


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