SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES

II MCA - I Semester	**L**	**P**	**C**
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16MCA212 DATABASE MANAGEMENT SYSTEMS

Course Objectives:

- To expose the students to the fundamentals of Database Management Systems.
- To make the students understand the relational model.
- To familiarize the students with ER diagrams.
- To expose the students to SQL.
- To familiarize the students with the normalization process.
- To make the students to understand the fundamentals of Transaction Processing and Query Processing.
- To make the students to understand the fundamentals of Concurrent Processing and Recoverability.

Syllabus:

UNIT I : Introduction & Data Modeling using the ER Model

Database System Applications - Purpose of Database Systems - View of Data - Database Languages - Database Design - Database Architecture - Database Users and Administrators.

Data Base Design and ER Diagrams- Entities, Attributes and Entity sets- Relationships and Relationship sets – Additional features of the ER model – Conceptual design with the ER model-EER diagrams - Specialization and Generalization.

UNIT II : The Relational Model

Structure of Relational Data Bases – Basic Structure, Data Base Schema, Keys, Query Languages.

Relational Algebra And Calculus – Preliminaries – Relational Algebra – Relational Calculus – Expressive power of Algebra and Calculus.

UNIT III : SQL & PL/SQL

Interactive SQL Part I - Types of Data Constraints - Computations done on Table Data - Oracle functions - Grouping Data from Tables in SQL - Sub queries – Joins - Concatenation data from table columns using the Union - Intersect and Minus Clause – Views – Sequences - Granting and Revoking Permissions - Advantages of PL/SQL - The

Generic PL/SQL block - Control Structure - What is Cursor - Database Triggers - Types of Triggers.

UNIT IV : Relational Database Design & Transaction Management

Schema refinement and Normal Forms – Introduction to schema refinement – Functional Dependencies – Reasoning about FDS – Normal Forms – Properties of Decompositions – Normalizations.

Transaction Concept - Transaction States - Concurrency Executions – Serializability – Recoverability - Testing for Serializability.

UNIT V : Concurrency Control & Recovery System

Lock-Based Protocol - Timestamp-Based Protocols - Validation-Based Protocols - Deadlock Handling.

Failure Classification - Storage Structure - Recovery and Atomicity - Log-Based Recovery - Recovery with Concurrent Transactions .

Course Outcome:

- Gain an insight into the concepts of Databases System and the basic elements of a relational database management system.
- Ability to identify the data models for relevant problems.
- Ability to design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respective data.
- Apply normalization and professional attitudes for the development of application software's.

TEXT BOOKS :

1. Database System Concepts, 5/e , 2006, Korth, Silbertz, Sudarshan, TATA McGraw- Hill, New Delhi.
2. Data base Management Systems, 3/e, 2003, Raghu Ramakrishnan , Johannes Gehrke, Mc Graw Hill, New Delhi.
3. SQL, PL/SQL Programming, 3/e, 2005, Ivan Bayross, BPB Publications, New Delhi.

REFERENCE BOOKS :

1. Fundamentals Of Database Systems, 5/e, 2008, Elmasri,Navathe, Pearson Education, New Delhi.

2. Introduction to Database Systems, 8/e, 2008, C.J.Date, Pearson Education, New Delhi.

3. Database Management Systems , 1/e, 2011, Peter Rob, A.Anand Rao and Carlos Coronel, Cengage Learning.

4. Oracle Database 10g PL/SQL 101, 1/e, 2004, Christopher Allen, TATA McGraw Hill, New Delhi.

5. Database Management Systems, 1/e, 2002, Alexis Leon and Mathews Leon, Vikas Publishing, New Delhi.