

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Integrated B.Tech.(CSE)-MBA
Course Code:	CSI0503
Course Title:	Database Management Systems
Course Type:	Core
Year of Introduction:	2021-22

Credit Scheme

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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. explain concepts and architecture of relational database management systems
2. relate various aspects of the relational database like models, functional dependencies and normalization
3. evaluate various storage and retrieval methods to correlate with relational model through appropriate indexing
4. interpret transaction processing, concurrency and recovery protocols for effective database management

Syllabus:

Total Teaching hours: 30

Unit	Syllabus	Teaching hours
Unit-I	Overview and Architecture of Database Systems: Purpose of database, File System versus DBMS, Advantages of a DBMS, Describing and Storing Data in a DBMS: The Relational Model, Levels of Abstraction in a DBMS, Data Independence. Multi-level architecture, Client/Server architecture, Mapping, Database users and Administrators.	05
Unit-II	Relational Database: Concepts and Design: Relational Model, Database Schema, Schema Diagrams, Relational Query Languages, Relational Operations. Relational Data Integrity: Keys: Candidate Keys and Constraints: Candidate Keys, Primary Keys and Alternate Keys, Foreign Keys and rules, Null value concept and other integrity constraints. Relational Operators: Relational Algebra: Closure, set operations, special relational operations, algebra for update operations, Relational Comparisons. Relational Calculus: Tuple and Domain-Oriented relational calculus. ER Diagram, ER to Relational Database Design.	10
Unit-III	Query Language Concepts: Concept of DDL, DML, DCL, structure – creation, alteration, constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries, correlated sub-queries, grouping, having, ordering, join and its types, views and its types, transaction control	05

Unit-IV	Normalization: Introduction, Non loss decomposition and functional dependencies, normal forms	05
Unit-V	Database Security and Transaction Management: Database Security concepts, Transaction concepts, Transaction recovery, Concurrency control problems and solutions	05

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents

- Suggested Readings/
References:
1. Silberschatz, Korth, Sudarshan Database System Concepts, McGraw-Hill Computer Science Series
 2. C J Date, An introduction to Database Systems, Addison-Wesley
 3. Nilesh shah, Database System using Oracle, PHI.
 4. Ramez Elmasri & Shamkant B. Navathe, Fundamentals of Database Systems, Addison-Wesley
 5. Hector Gracia-Molina, Jeffrey D. Ullman, and Jennifer Widom, Database System Implementation, Pearson

Suggested List of Experiments: NA

Suggested Case List: -NA-