



Marwadi University

Master of Science (Information Technology)

Semester III

Subject Code: 02MS0301

Subject Name: Relational Database Management System & Database
Administrator (RDBMS & DBA)

Learning Objectives:

- To understand the basics of Database Systems with the special focus on RDBMS
- Learn Additional aspects of RDBMS including ACID properties etc.
- Introduction to Advance Databases and their handling including Security Aspects
- Learn the aspects of DBA

Prerequisites:

- Basic knowledge of DBMS and SQL

Unit	Course Content	Hours
1	Introduction to RDBMS, Basic RDBMS Concepts, Normalization rules, Boyce Codd rules	06
2	Relational Algebra Basic operators (Select, project, union, set, difference, Cartesian product and rename) Additional operators (Set interaction, Natural Join, Division and Assignment operator), Insert, Update, Delete operators.	08
3	Query Processing and Optimization Overview, Query interpretation, Equivalence of expressions, Algorithm for executing query operations, Heuristics of Query, Optimization cost estimation of queries, Basic query optimization strategies: Selection operation, Sorting, Join operation	09
4	Transaction Processing and Concurrency control Transaction concepts : Transaction execution and Problems, Transaction execution and control with SQL, Transaction properties, Transaction log, Concurrency control, Locking methods for concurrency control, Timestamp methods for concurrency control, Optimistic methods for concurrency control (Read phase, validation phase, Write phase), Deadlock handling – detection and resolution	09
5	Database backup and Recovery Need of Database backup, Database backup techniques, Types of Database failures, Types of Database recovery (Forward recovery, Backward recovery, Media recovery), Recovery techniques (Differed Update, Immediate update, Shadow Paging, Checkpoints), Buffer management.	08
6	Implementing Security in Databases Security & integrity threats, Defense mechanisms, Statistical database auditing & control, Granting/revoking of privileges using SQL, Log Management.	08



Marwadi University

Master of Science (Information Technology)

Semester III

Subject Code: 02MS0301

**Subject Name: Relational Database Management System & Database
Administrator (RDBMS & DBA)**

Main Book(s):
<ol style="list-style-type: none">1. "Database Systems: Concepts, Design and Applications", S. K. Singh., Pearson Education, (2006), ISBN: 978-81-7758-567-4.2. "Database System Concepts", Silberschatz, Korth, Sudarshan, Fifth Edition, McGraw Hill International Edition, ISBN: 007-124476-X.3. "An Introduction to Database Systems", C.J.Date, A. Kannan, S. Swaminathan, Pearson Education, Eighth Edition, (2006), ISBN: 978-81-7758-556-8
Reference Book(s):
<ol style="list-style-type: none">1. "Fundamentals of Database Systems", Elmasri, Navathe, , Pearson Education , Fifth Edition (2008), ISBN: 978-81-317-1625-02. Database Management Systems, Ramakrishnan, Gehrke, , McGraw Hill, Third Edition.3. "Database Systems: Design, Implementation and Management", Peter Rob, Carlos Coronel, Cengage Learning , Seventh Edition(2007) ISBN-13:978-81-315-0319-5 .4. DBA - Oracle Press book5. Distributed Databases - M. Tamer OZSU
Chapter wise Coverage from the main reference book(s):
Book No. 1: Chapters - 4, 11,14,15,17,18
Book No. 2: Chapters-- 15,16,17