

FBEF411	RDBMS	3-0-0	3
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**Module I : (10 hours)**

Database System Architecture - Data Abstraction, Data Independence, Data Definitions and Data Manipulation Languages. Data models - Entity Relationship(ER), Mapping ER Model to Relational Model, Network .Relational and Object Oriented Data Models, Integrity Constraints and Data Manipulation Operations.

**Module II : (10 hours)**

Relation Query Languages, Relational Algebra and Relational Calculus, SQL.

Relational Database Design: Domain and Data dependency, Armstrong's Axioms, Normal Forms, Dependency Preservation, Lossless design.

Query Processing Strategy.

**Module III: (10 hours)**

Transaction processing: Recovery and Concurrency Control. Locking and Timestamp based Schedulers.

Database Recovery System: Types of Data Base failure & Types of Database Recovery, Recovery techniques

**Essential readings:**

1. Database System Concepts by Sudarshan, Korth (McGraw-Hill Education )
2. Fundamentals of Database System ByElmasari&Navathe- Pearson Education
3. An introduction to Database System – Bipin Desai, Galgotia Publications
4. Database System: concept, Design & Application by S.K.Singh (Pearson Education)
5. Database management system by leon&leon (Vikas publishing House).
6. Fundamentals of Database Management System – Gillenson, Wiley India
7. Database Modeling and Design: Logical Design by Toby J. Teorey, Sam S. Lightstone, and Tom Nadeau, "", 4<sup>th</sup> Edition, 2005, Elsevier India Publications, New Delhi