



## **F. Course Content**

### **UNIT I INTRODUCTION TO DBMS L – 9**

Purpose of Database System – Database Schema and Instances- Views of data – Database Languages - Database System Architecture – Database users and Administrator – Entity– Relationship model – E-R Diagrams - Introduction to relational databases –Structure of relational databases.

### **UNIT II RELATIONAL MODEL L – 9**

Basics of the Relational Model- From E/R Diagrams to Relational Designs – Keys and Integrity Constraints - Relational Algebra – Relational Calculus-Tuple –Structured Query language( SQL) Basic and additional Operations – Nested Queries & Join Queries– Embedded SQL- Triggers - View Definitions and Modifications.

### **UNIT III NORMALIZATION L – 9**

Introduction and problem of data redundancy-Features of good Relational database design- Functional Dependencies - Normalization – First Normal Form, Second Normal Form and Third Normal Form –Advanced Normalization -Boyce/Codd Normal Form, Fourth Normal Form and Fifth Normal Form- Dependencies preservation-Case Studies of database system.

### **UNIT IV TRANSACTION AND CONCURRENCY L – 9**

Transaction Concepts – ACID Properties –Transactions and Schedules- Transaction States - Concurrent Execution- Serializability- Types of Failure-Recoverability -System Recovery – Media Recovery – Types of Locks-Two Phase locking – Deadlock- Detection, Recovery and Prevention.

### **UNIT V PHYSICAL STORAGE AND DATABASE CONCEPTS L – 9**

Overview of Physical Storage Media – Magnetic Disks – RAID – Introduction to Distributed Databases and Client/Server Databases- Statistical Databases- Multidimensional and Parallel databases- Spatial and multimedia databases- Mobile and web databases- Object Oriented Databases-XML Databases.

**TOTAL : 45 Periods**

## **G. Learning Resources**

### **i. Text Books:**

1. Abraham Silberschatz, Henry F. Korth and S. Sudharshan, “Database System Concepts”, Sixth Edition, Tata McGraw Hill, 2011.
2. Hector Garcia-Molina, Jeff Ullman, and Jennifer Widom, “Database Systems: The Complete Book”, Pearson Education, Second Edition, 2008.
3. RamezElmasri and Shamkant B. Navathe, “Fundamentals of Database Systems”, Fifth Edition, Pearson Education, 2008.
4. C.J.Date, A.Kannan and S.Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2006.

### **ii. References Books:**

1. Raghu Ramakrishnan, “Database Management Systems”, Third Edition, McGraw Hill, 2003.
2. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.
3. C. J. Date ,”An Introduction to Database Systems” – 8th Edition, Addison Wesley, 2004.
4. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.

### **iii. Online Resources:**

- a) [http://cs.ulb.ac.be/public/\\_media/teaching/infoh303/dbmsnotes.pdf](http://cs.ulb.ac.be/public/_media/teaching/infoh303/dbmsnotes.pdf)
- b) <http://www.iitg.ernet.in/awekar/teaching/cs344fall11/lecturenotes/september%2012.pdf>
- c) <http://sage.virtual-labs.ac.in/home/pub/1/>