DATABASE SYSTEMS **Credit : 5**

1. Introduction : Purpose of database systems, View of data, data models, & interface, database language, transaction management, storage management, database administrator, database users, overall systems structure, Classification of Database Management System, Three-Schema Architecture. Lecture : 3

2. Data Modeling: Entity-Relationship Model, Basic concepts, design issues, mapping constraints, keys, E-R features, design of an E-R database schema, reduction of an E-R schema to tables. Lecture : 5

3. Relational Model: Structure of relational database, relational algebra, tulip relational calculus, domain relational calculus, extended relational-algebra operations, modification of the database and view, SQL and Other. Lecture : 5

4. Relational Languages: Background, basic structure, set operations, aggregate functions, null values, nested sub-queries, derived database, joined relations, DOL embedded SQL and other SL features, query-by-example. Lecture : 5

5. Integrity Constraints: Domain constraints, referential integrity, assertions, triggers and functional dependencies. Lecture : 3

6. Relational Database Design: Pitfalls in relational database design, decomposition, normalization using functional, multi-valued and join dependencies, domain key normal form and alternative approaches to database

design. Lecture : 5

7. Query Processing: Overview, catalog information for cost estimation, measures of query cost, selection operation, other operations, evaluation of expressions, Translating SQL query into Relational Algebra, transformation

of relational expressions, query optimization. Lecture : 8

8. Transactions: Transaction concept, transaction state, System log, Commit point, Desirable Properties of a Transaction, concurrent executions, serializability, recoverability, implementation of isolation, transaction definition in SQL, Testing for serializability. Lecture : 8

Text Books:

1. Database System Concepts, 3rd edition by A. Silberschatz, H.F .Korth,& S. Sudhatshan, McGraw Hill,

2. Fundamental of Database System by Elmasri, Navthe, Somayajulu, and Gupta, Pearson Education.

3. Introduction to Database Management system by ISRD Group, Tata McGraw Hill.

4. An Introduction to database system by C.J. Date, A. Kanana, S.Swamynathan, Pearson Education.

Reference books:

1. Database management System by Rajesh Narang, PHI

2. Database Systems by Rob Coronel, Galgotia Publication.