Course Title	**Database Systems**	Course No.	**CS322**
Department	Computer Science and Engineering	L-T-P [C]	3-0-0 [3]
Offered for	B. Tech. CSE	Type	Compulsory
Pre-requisite	CS313	To take effect from	July 2014

Objectives

1. To understand the concepts of database management system and its applications, data modeling, database design, and query languages.
2. To understand different files structures, transaction management, concurrency control, database recovery, query processing and optimization.

Learning Outcomes

1. Ability to apply different data modeling methods in requirement analysis, design, and implementation of database system.
2. Ability to apply the normal forms for efficient designing of relational database
3. Ability to use appropriate storage and access structures
4. Ability to use techniques for transaction management, concurrency control, and recovery
5. Ability to analyze complexity issues of query execution

Contents

1. Database System Concepts and Architecture, Data Modeling Using the Entity-Relationship (ER) Model, The Enhanced Entity-Relationship (EER) Model
2. Relational Data Model and Relational Database Constraints, Relational Database Design by ER-and EER-to-Relational Mapping, Relational Algebra and Relational Calculus, SQL: Schema Definition, Constraints, Queries, and Views
3. Functional Dependencies and Normalization, Algorithms for Query processing and optimization
4. Disk Storage, Basic File Structures, and Hashing, Indexing Structures for Files
5. Transaction Processing Concepts and Theory, Concurrency Control Techniques and Protocols, Database Recovery Techniques
6. Glimpses – Distributed Database, Handling Unstructured Data, Big Data, no SQL

Reference Books

1. Elmarsi, R. & Navathe, S. B., (2007), *Fundamental of Database System*, Pearson Education
2. Ramakrishna, R. & Gehrke, J., (2003), *Database Management Systems*, McGraw-Hill
3. Molina, H. G., Ullman, J. D., and Widom, J., (2001), *Database Systems The Complete Book*, Pearson Education
4. Raj, P., Raman, A., Nagaraj, D., and Duggirala, S., (2015), *High-Performance Big-Data Analytics: Computing Systems and Approaches,* Springer
5. Sabharwal, N. & Edward, S. G., (2014), *Big Data NoSQL Architecting MongDB,* CreateSpace Independent Publishing Platform