

24CSH203: ADVANCED DATABASE MANAGEMENT SYSTEMS

Hours/Week: 4

I.A.

Marks: 30

Credits: 4

Exam. Marks: 70

Course Learning Objectives:

- Basics of NoSQL databases, Relational Databases, Information Retrieval and XML databases.
- The concepts of column databases, distributed database and data warehousing schemes
- Various concepts of MongoDB and types of consistency.
- Advance Databases, Convergent databases and Disruptive Databases.

Course Outcomes: After completing the course, the students will be able to,

- Explore the concepts of NoSQL Databases.
- Understand and use columnar and distributed database patterns.
- Learn to use various Data models for a variety of databases.
- Explore the relationship between Big Data and NoSQL databases
- Work with NoSQL databases to analyze the big data for useful business applications.
- Understands the concept of MongoDB and types of consistency.
- Learn the concepts of Advance Databases, Convergent databases and Disruptive Databases.

UNIT-I

12Hrs.

Database Revolutions- System Architecture- Relational Database- Database Design, Data Storage- Transaction Management- Data warehouse and Data Mining- Information Retrieval. Big Data evolution- CAP Theorem- Birth of NoSQL , Document Database, XML and XML Databases- JSON Document Databases- Graph Databases.

UNIT-II

12Hrs.

Column Databases, Data Warehousing Schemes- Columnar Alternative- Sybase IQ- CStore and Vertica - Column Database Architectures, SSD and In-Memory Databases, In-Memory, Databases- Berkeley Analytics Data Stack and Spark.

UNIT-III

12Hrs.

Distributed Database Patterns, Distributed Relational Databases- Non-relational Distributed Databases- MongoDB - Sharing and Replication- HBase- Cassandra- Consistency Models, Types of Consistency- Consistency MongoDB- HBase Consistency- Cassandra Consistency.

UNIT-IV

12Hrs.

Data Models and Storage- SQL- NoSQL APIs- Return SQL - Advance Databases PostgreSQL- Riak- CouchDB- NEO4J- Redis- Future Databases— Revolution Revisited- Counter revolutionaries- Oracle HQ- Other Convergent Databases- Disruptive Database Technologies.

REFERENCE BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", Sixth Edition, McGrawHill.
2. Guy Harrison, "Next Generation Databases", Apress, 2015.
3. Eric Redmond, Jim R Wilson, "Seven Databases in Seven Weeks", LLC. 2018.
4. Dan Sullivan, "NoSQL for Mere Mortals", Addison-Wesley, 2015.
5. Adam Fowler, "NoSQL for Dummies ", John Wiley & Sons, 2015.

