

# 10B11CI312: Database Systems

**Course Credit: 4**

**Semester: III**

## **Introduction**

Database Management Systems (DBMS) consists of a set of interrelated data and a set of programs to access that data. They underpin any computer system and are therefore fundamental to any programme of study in computer science. An understanding of DBMS is crucial in order to appreciate the limitations of data storage and application behavior and to identify why performance problems arise.

Students who complete this course are expected to develop the ability to design, implement and manipulate databases. Students will apply and build databases for various day to day real life scenarios and real life applications. The course will by and large be structured but will introduce open-ended data base problems.

## **Course Objectives (Post-conditions)**

### **Knowledge objectives:**

- Ability to build normalized databases.
- Knowledge of Entity Relationship Modeling.
- Familiarity with SQL, embedded SQL and PLSQL.
- Familiarity with query processing and query optimization techniques.
- Understanding of transaction processing.
- Ability to handle recovery and concurrency issues.
- Familiarity with ODBC, JDBC.

### **Application objectives:**

- Develop the ability to design, implement and manipulate databases.
- Introduce students to build database management systems.
- Apply DBMS concepts to various examples and real life applications.

## **Expected Student Background (Preconditions)**

- Introduction to any programming language (Preferably, C)
- Data Structures

## **Topics Outline:**

S NO	Topics	Hrs
1	Introduction to Database Management Systems	2

2	Introduction to Conceptual Modeling	3
3	Relational Model	2
4	Relational Languages like SQL (including JDBC for database connectivity, ODBC, JDBC and SQLJ)	5
5	Integrity and Security	2
6	Database Design	6
7	Object oriented and Object Relational Database	4
8	File Storage Methods	2
9	Query Optimization	2
10	Transaction Management	8
11	Database System Architecture	2
12	Data warehousing and Data Mining	2
13	Case Studies	2
	Total	42

### **References**

1. Silberschatz, Korth and Sudarshan, “Database System Concepts”, 6<sup>th</sup> Edition, McGraw Hill, 2010
2. Elmasri and Navathe, “Fundamentals of Database Systems”, 6<sup>th</sup> Edition, Pearson, Addison-Wesley, 2010
3. C.J. Date, “An Introduction to Database Systems”, 8<sup>th</sup> Edition, Addison-Wesley, 2003
4. Ramakrishnan & Gherke, Database Management Systems, 2<sup>nd</sup> Edn., McGraw
5. Connolly and Begg, “Database Systems”, 4<sup>th</sup> Edn., Addison-Wesley, 2005
6. Toby, Lightstone and Jagadish, “Database Modeling and Design”, 5<sup>th</sup> Edn, Elsevier, 2011
7. Coronel and Rob, “Database Systems”, 9<sup>th</sup> Edn., Cengage, 2011
8. IEEE / ACM Transactions on Database Systems (TODS)
9. DBMS related Journals

**Evaluation Scheme:**

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

\*Internal Marks Breakdown:

Assignments	9 marks (3x3)
Quizzes	12 marks (3x4)
Regularity	4 Marks