

## Database Management System DBMS (3-0-3-4.5) IT214

Autumn Semester 2022-23

(BTech 5<sup>th</sup> Semester Core Course)

### Instructors

MINAL BHISE [minal\\_bhise@daiict.ac.in](mailto:minal_bhise@daiict.ac.in)

RACHIT CHHAYA [rachit\\_chhaya@daiict.ac.in](mailto:rachit_chhaya@daiict.ac.in)

### Course Outline

This course teaches use of Database Management System (DBMS) to understand and solve a wide range of information storage and query processing problems in organizations ranging from large corporations to personal applications. The course combines the practical aspects of DBMS use with basic theory discussions about database design. Students will be learning basic storage and query processing concepts of Parallel and Distributed Databases. As part of the lab assignments/ a project, students will learn to build and query the database using DBMS tool for the given problem domain (case study).

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### Text Books

- [T1] Silberschatz, Korth & Sudarshan, *Database System Concepts*, Seventh Edition, 2019, McGraw-Hill

### Course Outcomes:

The students will learn store data and process queries using RDBMS data model. Database will be designed and implemented using relational technology.

P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
	X	X	X		X		X	X	X		X

## Lecture Plan

Lectures	Topic	Reference
2	Course Overview: basic definitions, data storage, queries, query optimization, Indexing, distributed databases , transaction management	T1-Ch 1
5	Requirements collection and analysis, Data Models, E-R Model, Conceptual Design using E-R Model	T1 – Ch 1,6
5	Relational Model: introduction, database architecture, integrity constraints, Logical Database Design	T1- Ch 1, 2,7
3	Relational Algebra, SQL	T1- Ch 2, 3,4
6	Database Design & Tuning: FD, Normal Forms, Decomposition, Normalization, Schema Refinement	T1-Ch 7
2	Data Storage and Indexing	T1- Ch 12,13
3	Query Processing and Optimization: Query Cost, Evaluation Plans, Materialized Views	T1 – Ch 15,16
6	Parallel and Distributed Databases: Architecture, Storage, Query Processing, Transaction Processing	T1- Ch 20,21,22,23 ClassSlides
5	Transaction Management: ACID, Concurrency Control, Crash Recovery	T1 – Ch 16,17,18
2	Challenges in Modern Databases	Class Slides
Labs and Assignments	DBMS Tools, Database Administration	

## Evaluation Scheme

Labs and Assignments	30%
InSem Exam/s	30%
End Sem Exam	40%

***Note: Student will be evaluated during every lab. Every Lab submission will be evaluated. Student has to complete all the lab assignments and evaluations in order to pass the course.***