

Course Instructor: Dr Chiranjib Sur

Course Webpage: <https://chiranjibsuf.github.io/courses/da214.html>

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Objectives: Database Management Systems is the backbone of almost every application, learning it helps you store, organize, and retrieve data reliably, securely, and at scale. It builds the core skills behind real systems: data modeling, SQL, transactions, indexing, and performance tuning.

Prerequisites: Algorithms, Data Structure and Basic Programming.

Course Code: DA214

Course Name: Database Management Systems

Credits: 3-0-0-6

Syllabus: Relational DBMS: ER Model, relational model and algebras; Storage and file structure: Overview of secondary storage, RAID and flash storage, indexing (tree, hash, and bitmap), implementation of relational operators; SQL queries, constraints, triggers; Schema refinement and normal forms; Transaction management: ACID properties, concurrency control, crash recovery; Data warehousing and decision support.

Textbooks:

- R. Ramakrishnan, J. Gehrke, Database Management Systems, 3rd Edition, McGraw Hill, 2014.

References:

- H. Garcia-Molina, J. Ullman, J. Widom, Database System: The Complete Book, 2nd Edition, Pearson, 2013.
- P. Bailis, J. Hellerstein, M. Stonebraker, Readings in Database Systems, 5th Edition, 2015.