CS326: Advanced Database Management System	L	T	P	Database Management System
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Course Objective: To highlight the features of advanced SQL, parallel and distributed databases and architecture of modern database systems.

S. No.	Course Outcomes (CO)
CO1	Apply advanced concepts like integrity constraints, ER diagrams, relational algebra, and functional dependencies for data normalization.
CO2	Implement complex transaction techniques, including nested and multilevel transactions, focusing on workflows and serializability.
CO3	Use advanced strategies for query transformation, size estimation, and indexing to enhance query performance and database operations.
CO4	Design Parallel and Distributed Databases, focusing on data storage, fragmentation, replication, and concurrency control.
CO5	Design and manage active databases with real-time constraints, including triggers, event constraints, and concurrency control.
CO6	Assess and apply advanced security measures for databases, including access control, encryption, and secure transaction processing, to protect data integrity and privacy.

S. No	Contents	Contact Hours
UNIT 1	This course covers topics of Relational Databases Integrity Constraints, Extended ER diagram, Relational Algebra & Calculus, Functional, Multivalued and Join Dependency, Normal Forms, Rules about functional dependencies.	8

UNIT 2	Advanced Transaction Processing; Nested and multilevel transaction, Compensating Transaction & Saga, Long Duration Transaction ,Weak Level of Consistency, Transaction Work flows, Transaction Processing Monitors, Schedules, Serializability- Conflict & View	**8**
UNIT 3	Query Processing ; General Strategy for Query Processing ,Transformations ,Expected size ,Statistics in Estimation ,Query improvement ,View Processing ,Query Processor	**8**
UNIT 4	Query Optimization: Indexing and Query Optimization, Limitations of Relational Data Model ,Null Values & Partial Information	**8**
UNIT 5	Parallel and Distributed Databases: Distributed Data Storage – Fragmentation & Replication, Location and Fragment Transparency, Distributed Query Processing and Optimization, Distributed Transaction Modelling & Concurrency Control, Distributed Deadlock ,Commit Protocol, Design of Parallel Databases ,Parallel Query Evaluation	**8**
UNIT 6	Active Database and Real Time Databases: Triggers in SQL, Event Constraint and Action-ECA rules ,Query Processing & Concurrency Control ,Compensation & Databases Recovery	**8**
	Total	**48**