

# Database Management Systems

Paper Code: ETCS-208

Credits: 4

**Total lecture/ Tutorial classes available: 42**

S.No.	CONTENTS	No. of hours
	<b>Ist TERM</b>	
	Unit-1	
1.	<b>Introductory Concept of DBMS:</b> Database-System Applications, Purpose of Database Systems, Views of Data, Data Independence, Database System Architecture – levels, Mapping.	2
2.	Database users and DBA, Entity – Relationship model,	2
3.	ER model constraints, Types of keys, Design issues, E-R Diagram with examples	3
4.	Extended E-R features- Generalization, Specialization, Aggregation, Translating E-R model into Relational model.	3
	Unit-2	
5.	<b>Relational Model:</b> The relational Model, The catalog, Types, Relational Algebra	2
6.	Fundamental operations, Additional Operations	3
7.	SQL fundamentals, DDL,DML,DCL PL/SQL Concepts,	3
8.	Cursors, Stored Procedures, Stored Functions, Database Integrity – Triggers.	2
	<b>IInd TERM</b>	
	Unit-3	
9.	Functional Dependencies: Use of functional Dependencies, Types of functional Dependencies, Canonical cover, extraneous attribute	3
10.	Non-loss Decomposition, Dependency Preservation First, Second Normal Forms	3
11.	Third Normal Forms, Boyce/Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form.	4
	Unit-4	
12.	<b>Transaction Management:</b> ACID properties, serializability of Transaction, Testing for Serializability and concurrency control,	2

13.	Lock based concurrency control:2Phase Locking protocol, Deadlock prevention, detection & recovery	3
14.	Time stamping methods	1
15.	Database recovery management: log based recovery.	2
16.	<b>Implementation Techniques:</b> Overview of Physical Storage Media, File Organization, Indexing and Hashing, B+ tree Index Files, Query Processing Overview, Measure of query cost, Catalog Information for Cost Estimation, Selection Operation, Sorting, Join Operation, Materialized views, Database Tuning.	4

**Text Books:**

- [1] Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", 5<sup>th</sup> Edition, Tata McGraw Hill, 2006
- [2] Elmsari and Navathe, "Fundamentals of Database Systems", 6th Ed., Pearson, 2013

**References Books:**

- [1] C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", 8<sup>th</sup> Edition, Pearson Education, 2006.
- [2] J. D. Ullman, "Principles of Database Systems", 2nd Ed., Galgotia Publications, 1999.
- [3] Vipin C. Desai, "An Introduction to Database Systems", West Publishing Co.,