COURSE CODE	COURSE TITLE	L	T	P	C
1151CS107	DATABASE MANAGEMENT SYSTEM	3	0	0	3

Course Category: Program Core

A. Preamble:

This course provides demands the need for efficient storage and manipulation of data which will be used worldwide and exposed to different applications.

B. Pre-requisite:

Sl. No	Course Code	Course Name
1	1151CS102	Data Structures

C. Links to Other Courses:

Sl. No	Course Code	Course Name
1	1151CS112	Object Oriented Software Engineering
2	1151CS114	Data warehousing and Data mining
3	1152CS139	Data Science
4	1156CS601	Minor Project
5	1156CS701	Major Project

D. Course Outcomes:

At the end of the course, the students are able to:

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
CO1	Identify and explain the underlying concepts of database technologies	K2
CO2	Design and implement a database schema for a given problem-domain	K3
CO3	Apply normalization for the given database application.	K3
CO4	Illustrate the properties of transaction and recovery management.	K2
CO5	Identifies the concept of physical storage media and various types of databases.	K2

E. Correlation of COs with POs :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	**H**	**H**			**L**								**H**		
CO2	**H**	**H**	**L**	**M**	**H**							**L**	**H**	**M**	**M**
CO3	**H**	**H**	**M**	**M**	**H**	**L**					**M**	**L**	**H**	**M**	
CO4	**H**	**H**	**L**	**M**	**M**	**L**					**M**	**L**	**H**		**L**
CO5	**H**	**H**			**L**	**M**	**L**				**M**		**H**		**L**

F. Course Content

UNIT I INTRODUCTION TO DBMS 9

Purpose of Database System – Database Schema and Instances- Views of data – Database Languages - Database System Architecture – Database users and Administrator – Entity–Relationship model – E-R Diagrams - Introduction to relational databases –Structure of relational databases.

UNIT II RELATIONAL MODEL 9

Basics of the Relational Model- From E/R Diagrams to Relational Designs – Keys and Integrity Constraints - Relational Algebra – Relational Calculus-Tuple –Structured Query language(SQL) Basic and additional Operations – Nested Queries & Join Queries–Embedded SQL- Triggers - View Definitions and Modifications

UNIT III NORMALIZATION 9

Introduction and problem of data redundancy-Features of good Relational database design-Functional Dependencies - Normalization – First Normal Form, Second Normal Form and Third Normal Form –Advanced Normalization -Boyce/Codd Normal Form, Fourth Normal Form and Fifth Normal Form- Dependencies preservation-Case Studies of database system

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UNIT IV TRANSACTION AND CONCURRENCY 9

Transaction Concepts – ACID Properties –Transactions and Schedules- Transaction States - Concurrent Execution- Serializability- Types of Failure-Recoverability -System Recovery – Media Recovery – Types of Locks-Two Phase locking – Deadlock- Detection, Recovery and Prevention.

UNIT V PHYSICAL STORAGE AND DATABASE CONCEPTS 9

Overview of Physical Storage Media – Magnetic Disks – RAID – Introduction to Distributed Databases and Client/Server Databases- Statistical Databases- Multidimensional and Parallel databases- Spatial and multimedia databases- Mobile and web databases- Object Oriented Databases-XML Databases.

TOTAL : 45 Periods

G. Learning Resources

A. **Text Books:**

1) Abraham Silberschatz, Henry F. Korth and S. Sudharshan, "Database System Concepts", Sixth Edition, Tata McGraw Hill, 2011.
2) Hector Garcia-Molina, Jeff Ullman, and Jennifer Widom, "Database Systems: The Complete Book", Pearson Education, Second Edition, 2008.
3) RamezElmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson Education, 2008.
4) C.J.Date, A.Kannan and S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.

B. **References Books:**

1. Raghu Ramakrishnan, "Database Management Systems", Third Edition, McGraw Hill, 2003.
2. S.K.Singh, "Database Systems Concepts, Design and Applications", First Edition, Pearson Education, 2006.
3. C. J. Date ,"An Introduction to Database Systems" – 8th Edition, Addison Wesley, 2004.

4. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.

C. **Online Resources:**

1. http://cs.ulb.ac.be/public/_media/teaching/infoh303/dbmsnotes.pdf
2. http://www.iitg.ernet.in/awekar/teaching/cs344fall11/lecturenotes/september%2012.pdf
3. http://sage.virtual-labs.ac.in/home/pub/1/