

COURSE CODE	COURSE TITLE	L	T	P	C
1153IT102	DATABASE MANAGEMENT SYSTEM	3	0	0	3

Course Category:

~~Foundation (0) / Program Core (1) / Program Elective (2) / Allied Elective (3) / University Elective (4) / Value Education Elective (5) / Independent Learning (6) / Industry Higher Learning Institute Interaction (7)~~

a.Preamble :

Database Management System or DBMS in short refers to the technology of storing and retrieving users' data with utmost efficiency along with appropriate security measures. This tutorial explains the basics of DBMS such as its architecture, data models, data schemas, data independence, E-R model, relation model, relational database design, and storage and file structure and much more.

b. Prerequisite Courses:

Fundamentals of IT

c. Related Courses:

- Advanced database
- Data warehousing and mining
- Database administration

d. Course Educational Objectives :

Students undergoing this course are expected

- Understand the difference between File system and DBMS, Data models and database system structure
- Learn how to use the integrity constraints over the relations and know the expressive power of Algebra and calculus

CO No's	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Explain the basic concepts of the database, data models and Design a database using ER diagrams and map ER into Relations.	K2
CO2	Illustrate the concepts of Relational Algebra and Distributed database.	K2, S3
CO3	Develop a simple database applications using normalization.	K2, S3
CO4	Discuss about the concepts of transaction, Concurrency and Recovery techniques.	K3, S3

CO5	Apply query evaluation techniques to monitor the performance of the DBMS.	K3, S3
CO6	Demonstrate practical on theory concepts	K3, S3
CO7	Use DDL and DML commands	K3

- Learn the query languages features which are the core of SQL's , DML, Join operations and Triggers
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- Enhancing knowledge about SQL Queries, PL/SQL functions and basics of front end tools.
- To give a good formal foundation on the relational model of data
- To introduce the concepts of transactions and transaction processing

e. Course Outcomes :

Upon the successful completion of the course, students will be able to:

f. Correlation of COs with POs :

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2	M											
CO3	M											
CO4	M											
CO5	M											
CO6	H	M	M	M	M							
CO7					M							

H- High; M-Medium; L-Low

g. Course Content:

UNIT I INTRODUCTION TO DBMS

L – 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

L – 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

L – 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.

UNIT IV TRANSACTION AND CONCURRENCY

L – 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

L – 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**Learning Resources****i. Text Books:**

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Eighth Edition, Tata McGraw Hill, 2012 (Unit I and Unit-V) .
2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2012.(Unit II, III and IV)

ii. Reference Books:

1. Ramez Elmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, Fourth Edition , Pearson / Addison wesley, 2007.
2. Raghu Ramakrishnan, “Database Management Systems”, Third Edition, McGraw Hill, 2003.
3. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.

iii. Online resources

1. http://cs.ulb.ac.be/public/_media/teaching/infh303/dbmsnotes.pdf
2. <http://www.iitg.ernet.in/awekar/teaching/cs344fall11/lecturenotes/september%2012.pdf>