

DATABASE MANAGEMENT SYSTEMS

IV Semester: CSE III Semester: IT																				
Course Code	Category	Hours / Week			Credits	Maximum Marks														
ACS005	Core	L	T	P	C	CIA	SEE	Total												
		3	1	-	4	30	70	100												
Contact Classes: 45		Tutorial Classes: 15		Practical Classes: Nil			Total Classes: 60													
<p>I. COURSE OVERVIEW: Database management system is intended to provide a clear understanding of fundamentals with emphasis on their applications to create and manage large data sets. It emphasizes on technical overview of database software to retrieve data from database. This includes database design principles, normalization, concurrent transaction processing, security, recovery and file organization techniques. This will provide adequate knowledge to understand future evolutions of data technologies.</p> <p>II. OBJECTIVES: The course should enable the students to:</p> <ul style="list-style-type: none"> I Efficient ways of designing database by encapsulating data requirements for business and organizational scenarios II Analysing and developing sophisticated queries in database language SQL for extracting information from large datasets III Enhancing skills in developing and managing data efficiently in related engineering problems. <p>III. COURSE OUTCOMES: After successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> CO 1 Outline the importance of database system, RDBMS and its functionalities for voluminous data storage and management. Understand CO 2 Model the real world database systems using Entity Relationship Diagrams from the requirement specification. Apply CO 3 Construct queries in Relational Algebra, Relational Calculus and SQL to retrieve desired information. Apply CO 4 Identify appropriate normalization technique using dependencies for controlling the redundancy of data in database. Apply CO 5 Demonstrate ACID properties of Transaction processing, currency control protocols and recovery to preserve the database in a consistent state. Understand CO 6 Organize data storage and file organization techniques using tree and hash indices for effective query processing. Apply <p>IV. SYLLABUS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">UNIT-I</td> <td style="width: 60%; text-align: center;">CONCEPTUAL MODELING</td> <td style="width: 25%; text-align: center;">Classes: 10</td> </tr> <tr> <td colspan="3">Introduction to file and database systems: Database system structure, data models, introduction to network and hierarchical models, ER model, relational model.</td> </tr> <tr> <td style="text-align: center;">UNIT-II</td> <td style="text-align: center;">RELATIONAL APPROACH</td> <td style="text-align: center;">Classes: 08</td> </tr> <tr> <td colspan="3">Relational algebra and calculus: Relational algebra, selection and projection, set operations, renaming, joins, division, examples of algebra queries, relational calculus, tuple relational calculus, domain relational calculus, expressive power of algebra and calculus.</td> </tr> </table>									UNIT-I	CONCEPTUAL MODELING	Classes: 10	Introduction to file and database systems: Database system structure, data models, introduction to network and hierarchical models, ER model, relational model.			UNIT-II	RELATIONAL APPROACH	Classes: 08	Relational algebra and calculus: Relational algebra, selection and projection, set operations, renaming, joins, division, examples of algebra queries, relational calculus, tuple relational calculus, domain relational calculus, expressive power of algebra and calculus.		
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UNIT-III	BASIC SQL QUERY	Classes: 10
SQL data definition; Queries in SQL: updates, views, integrity and security, relational database design. Functional dependencies and normalization for relational databases up to five normal forms.		
UNIT-IV	TRANSACTION MANAGEMENT	Classes: 09
Transaction processing: Introduction, need for concurrency control, desirable properties of transaction, schedule and recoverability, serializability and schedules; Concurrency control: Types of locks, two phases of locking, deadlock, time stamp based concurrency control, recovery techniques , concepts, immediate update, deferred update, shadow paging.		
UNIT-V	DATA STORAGE AND QUERY PROCESSING	Classes: 08
Record storage and primary file organization, secondary storage devices, operations on files, heap file, sorted files, hashing techniques, and index structures for files; Different types of indexes, B tree, B+ tree, query processing.		
Text Book:		
Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", McGraw-Hill, 4 th Edition, 2002.		
Reference Books:		
<ol style="list-style-type: none"> 1. Ramez Elmasri, Shamkant B. Navathe, "Fundamental Database Systems", Pearson Education, 3rd Edition, 2003. 2. Raghu Ramakrishnan, "Database Management System", Tata McGraw-Hill Publishing Company, 3rd Edition, 2003. 3. Hector Garcia Molina, Jeffrey D. Ullman, Jennifer Widom, "Database System Implementation", Pearson Education, United States, 1st Edition, 2000. 4. Peter Rob, Corlos Coronel, "Database System, Design, Implementation and Management", Thompson Learning Course Technology, 5th Edition, 2003. 		
Web References:		
<ol style="list-style-type: none"> 1. https://www.youtube.com/results?search_query=DBMS+onluine+classes 2. http://www.w3schools.in/dbms/ 3. http://beginnersbook.com/2015/04/dbms-tutorial/ 		
E-Text Books:		
<ol style="list-style-type: none"> 1. http://www.e-booksdirectory.com/details.php?ebook=10166 2. http://www.e-booksdirectory.com/details.php?ebook=7400re 		
Course Home Page:		