**17CS41O2 - DATABASE MANAGEMENT SYSTEMS**

**(CSE)**

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 2-2-0 |
| **Pre-requisite:** | Basic foundations in mathematics and preliminary fundamentals of data and information | **Sessional Evaluation:**  **Univ. Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Objectives:** | Students undergoing this course are expected to: | |
| 1.Learn the areas of databases and composition of queries using structured query  language  2.Study various database design models for building applications  3.Evaluate a business situation while designing a database system  4. Learn the SQL to create simple databases.  5. Learn the basic issues of normalization and exposure on relational database design.  6. Study the transaction management and recovery. | |
| **Course Outcomes:** | Upon successful completion of the course, the students will be able to: | |
| **CO1** | Master the basic concepts and their applicability |
| **CO2** | Understand relational model and the relational algebraic operations. |
| **CO3** | Learn ER model and its usage in applications. |
| **CO4** | Familiar with SQL to create simple databases |
| **CO5** | Identify the basic issues of normalization and exposure on relational database design. |
| **CO6** | Acquire knowledge in transaction management and recovery. |
| **Course Content:** | UNIT – I  **Introduction**: Database system applications, purpose of database systems, view of data, database languages, relational databases, data storage and querying, transaction management, database architecture, database users and administrators.  UNIT – II  Relational model: Structure of relational databases, fundamental relational algebra operations, additional relational algebra operations, extended relational algebra operations, null values, modification of the database.  UNIT – III  Database design and the E-R model: Overview of the design process, the entity-relationship model, constraints, entity- relationship diagrams, entity-relationship design issues, weak entity sets, extended E-R features, reduction to relational schemas, other aspects of database design.  UNIT – IV  SQL: Data definition, SQL data types and schemas, integrity constraints, basic structure of SQL queries, set operations, aggregate functions, null values, nested sub queries, complex queries, views, modification of the database, joined relations.  UNIT – V  **Relational database design:** Features of good relational design, atomic domains and first normal form, decomposition using functional dependencies, functional dependency theory, algorithms for functional dependencies, decomposition using multivalued dependencies ,more normal form, database-design process .  UNIT – VI  **Transaction management and recovery**: Lock based and timestamp based protocols, multiple granularity, multiversion schemes, deadlock handling, weak levels of consistency, recovery and atomicity, recovery algorithm, buffer management, remote backup systems. | |
| **Text books &**  **Reference books:** | **Text books:**  1. “Database System Concepts”, by Silberschatz, Korth, Sudarshan, McGrawHill,  6th Edition, 2011.  **Reference books:**  1. “Fundamentals of Database Systems”, by Ramez Elmasri and Shamkant Navathe,  Durvasula V L N Somayajulu, Shyam K Gupta, Pearson Education, 2006.  2.“Database Systems – A Practical Approach to Design, Implementation and  Management”, by Thomas Connolly, Carolyn Begg, Pearson Education, 3rd Edition,  2002.  3.”Database Management Systems”, by Raghu ramakrishnan Publisher: McGraw Hill,  Third Edition. | |
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