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| **NAME OF DEPARTMENT:** | | | | | | | | | | | | | | | | | | | School of Computing | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Subject Name:** | | | | | | | | | Database Management Systems | | | | | | | | | | | | | | | | | | | | | | | | | **Subject Code:** | | | | | | | | TBC 401 | | |
|  | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | |  | | |
| **Course Name:** | | | | | | | | | Bachelor of Computer Applications (BCA) | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | |  | | |
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| **1** | **Contact Hours:** | | | | | | | | | | | 45 | | | |  | | | | | | | | | | | | | | | | | | | **L** | | 3 | | | **T** | | 0 | **P** | 0 | |
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| **2** | **Examination Duration (Hrs):** | | | | | | | | | | | | | | | | | | | | |  | **Theory** | | | | | 0 | 3 |  | **Practical** | | | | | 0 | | 0 | |  | | | | |
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| **3** | **Relative Weightage:** | | | | | | | | | | | | |  | | | | | **CWE:** | | | | | | | 25 | | **MTE:** | | | 25 | | **ETE:** | | | | 50 | | | |  | | | |
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| **4** | **Credits:** | | | | | | 0 | | | 3 | |  | | | | | | | | | | | | |  | | |  | | |  | |  | | | |  | | | |  | | | |
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| **5** | **Semester:** | | | | | | |  | | | |  | | | \* | | |  | | |  | | |  | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | **Autumn** | | | | | | | **Spring** | | | | | | | **Both** | | | | | | |  | | | | | | | | | | | | | | | | | |
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| **6** | **Pre-Requisite:** | | | | | | | | | | | **Knowledge of data, records, data type and computer, its storage.** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **7** | **Subject Area:** | | | | | | | | | | | **Computer Applications** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **8** | **Objective:** | | | | | | | | | | To familiarize students with the Data Base Management System | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **9** | **Course Outcomes:** | | | | | | | | | | | | | | A student who successfully fulfills the course requirements will be able to: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 1** | | | | Understand and evaluate the role of database management systems in information technology applications within organizations. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 2** | | | | Recognize and use contemporary logical design methods and tools for databases. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 3** | | | | Derive a physical design for a database from its logical design. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 4** | | | | Implement a database solution to an information technology problem. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 5** | | | | Understand the SQL data definition and SQL query languages. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **10** | | **Details of the Course:** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Unit No.** | | | **CONTENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **CONTACT HOURS** | | | | | |
| **1** | | | **Introduction:** An overview of database management system, Database System Vs File System, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DMI, Overall Database structure. Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | |
| **2** | | | **Relational Data Model and Relational Algebra:** Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, Different operations of relational algebra, Example of queries in relational algebra, Relational data model using ER . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | |
| **3** | | | **Introduction to SQL:** Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, Tables, views and indexes Queries and sub queries, Aggregate functions, Insert, update and delete operations, Joints, Unions, Intersection, Minus. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | |
| **4** | | | **Database Design & Normalization:** Functional dependencies, normal forms, first, second third normal forms, BCNF, inclusion dependencies, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | |
| **5** | | | **Transaction Processing Concepts:** Transaction system, Testing of serializability, Serializability of schedules, conflict and view serializable schedule, recoverability, Recovery form transaction failures, deadlock handling. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | |
|  | | | **TOTAL** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **45** | | | | | |
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| **11** | | **Suggested Books:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |
| **Sl.NO** | | | | **NAME OF AUTHORS/BOOKS/PUBLISHERS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **YEAR OF PUBLICATION/REPRINT** | | | | |
| 1. | | | | Ramez Elmasri, Shamkant B. Navathe: Fundamentals of Data Base Systems, 4th Edition, Pearson Education. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2003 | | | | |
| 2. | | | | Silberschatz−Korth−Sudarshan: Database System Concepts, Fourth Edition, TMH. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2001 | | | | |