

<b>COURSE TITLE</b>	<b>RELATIONAL DATABASE MANAGEMENT SYSTEM</b>
<b>COURSE CODE</b>	<b>05CA0207</b>
<b>COURSE CREDITS</b>	<b>2</b>

**Objective:**

- 1 Aim to provide an overview of databases, including data management systems, relational databases, data models, and database architecture.
- 2 Goal is to provide a comprehensive understanding of data models, including ER and relational models, along with key operations and constraints in DBMS
- 3 Cover SQL statements and functions for data manipulation, definition, control, constraints, operators, group by, order by, joins, dependencies, and functions in DBMS
- 4 Teach relational database design concepts, including functional dependency, normalization, concurrency control, and the ACID property in DBMS
- 5 Gain practical experience with popular DBMS tools and software, applying theoretical knowledge to real-world scenarios

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Gain an understanding of databases, encompassing data management systems, relational structures, data models, and architectural components
- 2 Students can design ER and relational models, as well as essential operations and constraints within database management systems.
- 3 Students will comprehensively understand and apply concepts related to the Relational Data Model, including querying data with Group By and Order By, utilizing operators, mastering joins and dependencies, and applying relational algebra
- 4 Students will master relational database design principles, including functional dependency, normalization, concurrency control, and the ACID property, facilitating adept management of databases within DBMS
- 5 Students will enhance their problem-solving skills by tackling real-world database challenges and scenarios

**Pre-requisite of course:**NA

**Teaching and Examination Scheme**

<b>Theory Hours</b>	<b>Tutorial Hours</b>	<b>Practical Hours</b>	<b>ESE</b>	<b>IA</b>	<b>CSE</b>	<b>Viva</b>	<b>Term Work</b>
0	0	4	0	0	0	25	25
<b>Contents : Unit</b>	<b>Topics</b>						<b>Contact Hours</b>
<b>Total Hours</b>							

### Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	<p><b>Unit 1</b></p> <ul style="list-style-type: none"> <li>• Create a simple relational database schema with tables for storing student information.</li> <li>• Develop a relational database management system for the college database management system.</li> <li>• Define the primary keys for each table and establish relationships between them.</li> <li>• Perform insert duplicate data in the table which have primary and not null constraint.</li> <li>• Define Not Null for each table and establish relationships between them.</li> <li>• Write a SQL statement to insert sample data into the tables and practice querying to retrieve specific information.</li> <li>• Practice creating and dropping tables in a relational database using SQL commands.,</li> <li>• Design an entity-relationship (ER) diagram for a given scenario.</li> <li>• Design an entity-relationship (ER) diagram for a given scenario. (School Management System).</li> <li>• Design an entity-relationship (ER) diagram for a given scenario. (Hospital Management System).</li> <li>• Design an entity-relationship (ER) diagram for a given scenario. (Library Management System).</li> <li>• Design an entity-relationship (ER) diagram for a given scenario and translate it into a relational database schema.</li> <li>• Design an entity-relationship (ER) diagram for a given scenario and translate it into a relational database schema. (Hospital Management System).</li> <li>• Design an entity-relationship (ER) diagram for a given scenario and translate it into a relational database schema. (Library Management System).</li> <li>• Design an entity-relationship (ER) diagram for a given scenario and translate it into a relational database schema. (School Management System).</li> </ul>	30

### Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	<b>Unit 2</b> • Practice using SQL clauses (WHERE) to filter, sort, and group data. • Practice using SQL clauses and find the top and least element from the table. • Perform basic data manipulation operations such as inserting new records, updating existing records, and deleting records., • Make a list of DDL, DML, DCL, and DQL commands. • Apply to alter command in table and change the column name, drop data, change the datatype of the column, and add the column in Table. • Design a database schema for a social media platform, considering factors such as user profiles, posts, comments, and relationships. • Practice using SQL clauses (ORDER BY) to filter, sort, and group data., • Practice using SQL clauses (GROUP BY) to filter, sort, and group data. • Experiment with DDL commands (CREATE) to modify the structure of a database schema. • Experiment with DDL commands (ALTER) to modify the structure of a database schema. • Experiment with DDL commands (DROP) to modify the structure of a database schema., • Explore different JOIN operations (INNER JOIN) to retrieve data from multiple related tables. • Explore different JOIN operations (LEFT JOIN) to retrieve data from multiple related tables. • Explore different JOIN operations (RIGHT JOIN) to retrieve data from multiple related tables. • Explore different JOIN operations (FULL JOIN) to retrieve data from multiple related tables. • Explore different JOIN operations (INNER JOIN, LEFT JOIN, RIGHT JOIN) to retrieve data from multiple related tables.	30
<b>Total Hours</b>		<b>60</b>

### Textbook :

- 1 Database System Concepts, Abraham Silberschatz, Henry F. Korth, and S. Sudarshan,, McGraw-Hill Education , 2019

### References:

- 1 Database Systems: The Complete Book, Database Systems: The Complete Book, Hector Garcia-Molina, Jeff Ullman, and Jennifer Widom, Pearson, 2008
- 2 Database Systems: Design, Implementation, and Management, Database Systems: Design, Implementation, and Management, Carlos Coronel and Steven Morris, Cengage Learning, 2014
- 3 Database System Concepts, Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw Hill, 2021

### Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery

<b>Remember / Knowledge</b>	<b>Understand</b>	<b>Apply</b>	<b>Analyze</b>	<b>Evaluate</b>	<b>Higher order Thinking / Creative</b>
20.00	30.00	25.00	15.00	10.00	0.00

**Instructional Method:**

- 1 Board work
- 2 DEMO

**Supplementary Resources:**

- 1 <https://www.tutorialspoint.com/dbms/index.htm>
- 2 <https://www.javatpoint.com/dbms-tutorial>
- 3 <https://docs.oracle.com/en/database/>
- 4 <https://www.khanacademy.org/computing/computer-programming/sql>
- 5 <https://sqlbolt.com/>