

Course Title	Database Systems
Course Code	CC-215
Credit Hours	3+1
Category	Computing Core
Prerequisite	None
Co-Requisite	None
Follow-up	DI-324: Database Administration and Management
Course Description	<p>File Systems and Databases: Introduction, A File system Critique, Database Systems, Database approach vs file-based system, database architecture, three level schema architecture, data independence, Database Models. Introduction to RDBMS: Logical view of Data; Entities and Attributes, Tables and their Characteristics, Keys; relational data model, attributes, schemas, tuples, domains, relation instances, keys of relations, integrity constraints. Relational Algebra: Relational Database Operators, selection, projection, Cartesian product, types of joins. Entity Relationship (E-R) Modeling: Basic Modeling Concepts, entity sets, attributes, relationship, entity-relationship diagrams, Normalization of Database Tables: Objectives, Forms, Normalization and Database Design, functional dependencies, normal forms, Denormalization, Structured Query Language (SQL): Introduction, DDL Commands, Joins and subqueries in SQL, Grouping and aggregation in SQL, DML Commands, DCL Commands, Complex Queries and SQL Functions, Procedural SQL; Triggers, Stored procedures. Database Design: The System Development Life Cycle (SDLC), The Database Life Cycle (DBLC), Database Design Strategies, Transaction Management and Concurrency Control: Introduction, Transaction Properties and Types, Concurrency Control Issues, Database Recovery Management. DDBMS: Evolution, Components, Distributed processing and distributed databases, Distributed database transparency features. Distributed database design, Data fragmentation, Data replication, NoSQL systems.</p>
Text Book(s)	1. Carlos Coronel, Steven Morris, Database Systems: Design, Implementation & Management, 13 th Edition, Cengage Learning, 2017. ISBN-10: 1337627909.
Reference Material	<ol style="list-style-type: none"> 1. Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi, Modern Database Management, 12th Edition, Pearson, 2015. ISBN-10: 0133544613. 2. Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation and Management, 6th Edition, Pearson, 2015. ISBN-10: 1292061189. 3. Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems, 7th Edition, Pearson, 2016. ISBN-10: 1292097612. 4. C. J. Date, An Introduction to Database Systems, 8th Edition, Pearson, 2004. ISBN-10: 0321189566. 5. Michael McLaughlin, Oracle Database 11g PL/SQL Programming, 1st Edition, McGraw-Hill Education, 2008, ISBN: 0071494456.