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| **Fundamental of Database System** | **Module Title:** |
| **CAP 261** | **Module ID:** |
| **CSC 212** | **Prerequisite:** |
| **4** | **Level:** |
| **3 (3+0+1)** | **Credit Hours:** |

**Module Description:**

Characteristics of the database approach. Database concepts and architecture; Data models, schemas and instances; Program data independence, Database languages and interfaces. Data models for database systems; The E-R DM, Relational DM and Relational Algebra. Relational model constraints; Domain, key, and integrity constraints. SQL-relational DB language; Data definition, queries, update statements, and views in SQL. Database design; functional dependencies, Normal forms. Introduction to OO databases.

**Module Aims:**

* Understand the basics and concepts of database systems.
* Design, implement and evaluate a computer-based DB system to meet desired users' needs.
* Use professionally Structured Query Language (SQL) and understand SQL processing.

**Learning Outcomes:**

* a) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
* b) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
* c) An ability to use current techniques, skills, and tools necessary for computing practice.

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| List of Topics | No. of  Weeks | Contact Hours |
| Databases and Database Users | 1 | 3 |
| Database System Concepts and Architecture | 2 | 6 |
| Data Modeling Using the Entity-Relationship Model | 2 | 6 |
| The Relational Data Model, Relational Constraint | 2 | 6 |
| ER-and-EER-to-Relational Mapping, and Other Relational | 3 | 9 |
| Functional Dependencies and Normalization for Relational Databases | 2 | 6 |
| SQL- The Relational Database Standard | 3 | 9 |

**Textbook:**

R. Elmasri, S. Navathe; Fundamentals of Database Systems.; 2010; AddisonWesley