SEMESTER-II

St. Xavier's College (Autonomous), Ahmedabad

Syllabus of Semester – II of the following departments under Faculty of Computer Science based on Undergraduate Curriculum Framework to be implemented from the Academic Year 2025-26.

DEPARTMENT OF COMPUTER SCIENCE

BCA (Hons.)

Category – IV

Skill Enhancement Course – 1: Database Management System - I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-Requisite(s) of the Course (if any)
	Lecture	Tutorial	Practical / Practice		
Database Management System - I	1	0	1	10 + 2 from a recognized board in any stream	Nil

Learning Objective:

1. This course introduces students to information of data, working of related data to gain, students would be able
2. To understand the concept, role and importance of Database
3. To recognize the elements of Database for real applications
4. To identify the key relationship between the Database components
5. To be aware of the real functions of Database Management Software
6. To comprehend the type of relational model to apply according to the scenery of applications
7. To normalize the Tables to remove the anomaly existing in Database
8. To deal with every tiny element of the Database.

Learning Outcome:

1. Able to create a database to store data
2. Fire queries to fetch the required data from the database.
3. Will enable them to create database for the really world applications.

UNIT 1: Database System, Data Models and Relational Database Model Data, Information and Database

- Data Vs. Information
- Introduction of the Database and the DBMS
- Why Database Design is Important
- Role and Advantage of DBMS
- Types of Databases

Database Systems

- The Database System Environment

Data Model Basic Building Block

- The Hierarchical Model
- The Network Model
- The Relational Model
- The Object-Oriented Model
- The ER Model

The Relational Database Model

- Logical view of Data
- Tables and Their characteristics
- Keys
- Integrity Rules
- Concept of Functional Dependency
- Relational Set Operators
- The Data Dictionary and The System Catalog

Relationship within the Relational Database

- The 1 : M Relationship
- The 1 : 1 Relationship
- The M : N Relationship
- Data Redundancy Revisited

Codd's Relational Database Rules

UNIT 2: Entity Relationship Modeling and Normalization

The Entity Relationship Model

- Entities
- Attributes
- Relationships
- Connectivity and Cardinality
- Existence Dependence
- Relationship Strength
- Weak Entities
- Relationship Participation
- Relationship Degree

- Recursive Relationship
- Composite Entities

Developing an ER diagram

Normalization of Database Tables

- The need of Normalization
- The Normalization process
    - Conversion to First normal form
    - Conversion to Second normal form
    - Conversion to Third normal form
    - Boyce-Codd Normal Form

Textbook:

Database System Concepts (First Edition: 2008) Publisher: Cengage Learning
By Peter Rob and Carlos Coronel
Chap-1(1.1, 1.2, 1.6), chap-2(2.5(2.5.1, 2.5.2, 2.5.3)),
Chap-3(3.1, 3.2, 3.3, 3.4, 3.5, 3.6), chap-4(4.1, 4.2), chap-5(5.2, 5.3)

Reference Books:

1. Introduction to Database Management Systems (First Edition 2006) Publisher: Tata McGraw-Hill
   By ISRD Group

2. An Introduction to Database Systems (Eighth Edition 2006)
   Publisher : Pearson
   By C. J. Date, A. Kannan & S. Swamynathan

3. An Introduction to Database Systems
   Publisher: Pearson
   By : ITL Education Solutions Limited.