	Islamia University Bahawalpur	
	Department of Computer Science	
	Course Plan	

<b>Department</b> Computer Science	<b>Semester No</b> 03 (Spring 2024)	<b>Email:</b> <a href="mailto:Muhammad.usman@iub.edu.pk">Muhammad.usman@iub.edu.pk</a>
<b>Course Title</b> Database System	<b>Code</b> COSC-2103	<b>Credit Hours</b> 3-1-4
<b>Faculty</b> Muhammad Usman Ghani	<b>Class</b> BSCS 4 <sup>th</sup> Evening, A,B	<b>Office</b> 1.77

## TEXT AND MATERIAL:

### Text Book

1. Database Systems: A Practical Approach to Design, Implementation, and Management, 6th Edition by Thomas Connolly and Carolyn Begg

### Reference Material:

1. Database Systems: The Complete Book, 2nd Edition by Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom
2. Database System Concepts, 6th Edition by Avi Silberschatz, Henry F. Korth and S. Sudarshan


## COURSE DESCRIPTION:

The course aims to introduce basic database concepts, different data models, data storage and retrieval techniques, and database design techniques. The course primarily focuses on relational data models and DBMS concepts

## COURSE LEARNING OUTCOMES:

Upon completion of this course, the student should be able to:

S No	CLO Statement	PLO	Learning Domain and Level
CLO1	Explain fundamental database concepts.	1	C2
CLO2	Design conceptual, logical and physical database schemas using different data models.	2	C5
CLO3	Identify functional dependencies and resolve database anomalies by normalizing database tables	3	C2
CLO4	Use Structured Query Language (SQL) for database definition and manipulation in any DBMS	4	C4

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### ASSESSMENT SYSTEM:

<b>Theoretical/Instruction</b>	<b>100%</b>
<i>Assignments</i>	5%
<i>Quizzes</i>	5%
<i>CEPs/Project</i>	10%
<i>Midterm Exam</i>	30%
<i>End Semester Exam</i>	50%
<b>Total</b>	<b>100%</b>

- ATTENDANCE WILL BE TAKEN REGULARLY. IT IS THE RESPONSIBILITY OF STUDENTS TO MAINTAIN 75% ATTENDANCE.
- EXCUSES FOR OFFICIALLY AUTHORIZED ABSENCES MUST BE PRESENTED NO LATER THAN ONE WEEK FOLLOWING RESUMPTION OF CLASS ATTENDANCE.
- LATE ASSIGNMENTS **WILL NOT** BE ACCEPTED
- A STUDENT CAUGHT CHEATING IN ANY OF THE ASSIGNMENTS WILL GET 0 OUT OF 5%.
- NO MAKEUP WILL BE MADE FOR MISSING QUIZZES OR EXAMS.

### TOPICS COVERED

Week	Topic
1	Database-System Applications
	Purpose of Database Systems, system, database architecture, three level schema architecture,
	Database Design
2	Structure of Relational Database
	Database Schema, keys
3	Overview of the SQL Query Language
	SQL Data Definition, Additional Basic Operation
	<b>Assignment-1</b>
4	Set Operations
	Aggregate Functions
5	Nested Subqueries
	<b>Quiz-1</b>
	3 Basic Structure of SQL Queries
6	Modification of the Database
	Relational Algebra and Relational Calculus



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7	SQL Data Types and Schemas, Views
	Quiz -2 and Revision
8	<b>Mid Term</b>
9	Join Expressions
10	<b>Quiz -3, Project allocation, Assignment 1 Solution</b>
	<b>Assignment-2</b>
	Database System Development Lifecycle
11	Database Analysis and the DreamHome Case Study
12	Entity–Relationship Modeling
13	Normalization
14	<b>Quiz-4- Assignment 2 Solution</b>
	Methodology—Conceptual Database Design
15	Methodology—Logical Database Design for the Relational Model
	<b>Project Presentations</b>
16	<b>Final Term</b>