COURSE OUTLINE

INSTITUTION **University of Management & Technology, Lahore**
PROGRAM (S) TO BE EVALUATED **BS Computer Science**

Course Description:

Course Code	CC2141
Course Title	Database Systems
Credit Hours	3
Prerequisites by Course(s) and Topics	Data Structures and Algorithms
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	Quizzes 10%, Assignments. 15%, Midterm Exam: 25%, Case Study/Project/Report Writing/Presentation: 15%, Final Exam: 35%
Course Instructor	**Mr. Rana Marwat Hussain**
Textbook (or Laboratory Manual for Laboratory Courses)	Ramez Elmasri,Shamkant Navathe, Fundamentals of Database Systems 7th edition,Kindle Edition Feb3, 2022. ISBN-13: 978-0133970777, ISBN-10: 0133970779
Reference Material	• Introduction to PL\SQL by Oracle Press • C. J. DATES "Database Management Systems"8″ • M. TAIMER "Distributed Database Management Systems" 2nd Edition • Fred R. McFadden, Jeffrey Hoffer, "Modern Database Management" Design, Implementation, Management, Latest Edition, ISBN 0-201-47432-x • M. TAIMER "Distributed Database Management Systems" 2nd Edition • Fred R. McFadden, Jeffrey Hoffer, "Modern Database Management" Design, Implementation, Management, Latest Edition, ISBN 0-201-47432-x • Dr. Nayyer Masood (VU), Database Systems-Video Lectures
Course Goals/Objectives	This course introduces the fundamental concepts necessary for designing, using, and implementing database systems and database applications. Further, it stresses the fundamentals of database modeling and design, the languages and models provided by the database management systems, and database system implementation techniques. Other goals are to provide an in-depth and up-to-date presentation of the most important aspects of database systems and applications, and related technologies. It is assumed that readers are familiar with elementary programming and data-structuring concepts and that they have had some exposure to the basics of computer organization.

Course Learning Outcomes (CLOs):

Measurable Learning Outcomes	CLOs	Description	Domain & BT Level *
	CLO 1	**Describe** the fundamental database concepts, DBMS three Schema Architecture and SQL (DDL and DML) commands.	Cognitive, Two (C2)
	CLO 2	**Illustrate** the conceptual Data Model (ER/EER Schema) and Implementation data model (Relational Database Schema) **demonstrate** the integrity constraints and ER-Relational database mapping algorithms.	Cognitive, Two (C2)
	CLO 3	**Contrast** good database design principles with bad database design using Functional Dependencies (FDs), Inference Rules of FDs, six normalization forms and joining algorithms.	Cognitive, Four (C4)
	CLO 4	**Analyze** concurrency control algorithms to avoid deadlock in transactions.	Cognitive, Four (C4)
	CLO 5	**Design and implement** a web-based database application that to solve a mini-world problem.	Cognitive, Four (C4)
* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain			

Mapping of CLOs to Program Learning Outcomes (PLOs):

CLOs/PLOs	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
PLO 1: Academic Education					
PLO 2: Knowledge for Solving Computing Problems					
PLO 3: Problem Analysis	✓				
PLO 4: Design and Development of Solutions		✓	✓	✓	✓
PLO 5: Modern Tool Usage					✓
PLO 6: Individual and Teamwork					
PLO 7: Communication					
PLO 8: Computing Professionalism and Society					
PLO 9: Ethics					
PLO 10: Life Long Learning					

Tentative Lecture Plan					
	Week	Topics Covered	Reading from Textbook	Assignments /Quizzes	CLOs
	1	Introduction to Databases & their users	Chapter 1 & Slides		CLO 1
	2 – 3	DBMS Concepts & Architecture	Chapter 2	HW-1	CLO 1
	3 – 4	Conceptual Model (ER/EER Diagram)	Chapter 3&4	HW-2, Quiz-1	CLO 2
	5	Relational Data Model	Chapter 5 & Slides	Case Study	CLO 2
	6	Relational Algebra and Relational Calculus	Chapter 6	HW-3	CLO 2
	7	ER-Relational Mapping Algorithms.	Chapter 7	HW-4, Quiz-2	CLO 2
	8	Mid Term Exam (Tentative Schedule)			
	9-11	Functional Dependencies & Normalization, joining algorithms	Chapter 10-11	HW-5	CLO 3
	12	Transaction Management: Recovery & Concurrency	Chapter 15 & 16		CLO 4
	13	Security	Chapter 17	Quiz-3	CLO 3
	14	Distributed Databases	Chapter 21	Quiz-4	CLO 4
	15	Presentations / Demos	Student Projects		CLO 4
	16	Final Exams			

Laboratory Projects/Experiments Done in the Course	Assignments and Project			
Programming Assignments Done in the Course	1-2 programming assignment			
Class Time Spent on (in credit hours)	3 hours per week			
Oral and Written Communications				

*-Tentative **Mapping of CLOs to Direct Assessments**

CLO	Quiz-1	Quiz-2	Quiz-3	Quiz-4	HW-1	HW-2	HW-3	HW-4	HW-5	Project	Midterm	Final
1	✓				✓						✓	✓
2		✓				✓		✓			✓	✓
3			✓				✓		✓			✓
4				✓						✓		✓
5										✓		

Instructor Name: Mr. Rana Marwat Hussain

Instructor Signature _____