SIXTEEN WEEK TEACHING PLAN

Course & Course Code	Database Systems /COSC-2103
Credit Hours	3
Department	Department of Computer Science
Course Type:	Applied
Theory/Lab	Theory
Program/semester/section	BS-INFT-4A and DASC-3A
Semester	
Course Instructor name/Designation	**Rida Fatima**/ Lecturer
Office	COSC-3.09AL
Office Hours / Counseling hours for students	Office Hours: 8:00am-4:00pm Counseling Hours: 2:00 Pm to 3:00 Pm
Email ID:	Rida.fatima@kfueit.edu.pk

Note: For practical/lab work, a separate teaching plan can be prepared.

Week 1	
Objectives / Learning Outcome	Understand basic concepts of DBMS architecture
Contents / Sub Contents	Introduction: A Brief introduction to Database Systems Data vs. Information Vs Knowledge. Why organizations need data?
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 2	
Objectives / Learning Outcome	Understand basic concepts of Database System Introduction and Concepts and Architectures
Contents / Sub Contents	Characteristics of the Database Approach. Advantages of Using the DBMS Approach, A Brief History of Database Applications.
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester

Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 3	
Objectives / Learning Outcome	Understand basic concepts of DBMS Concepts and Architectures
Contents / Sub Contents	DBMS Concepts and Architectures: Data Models, Schemas, and Instances. Three-Schema Architecture and Data Independence. Database Languages and Interfaces. The Database System Environment. Classification of Database Management Systems.
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practices and Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 4	
Objectives / Learning Outcome	Understand basic concepts of Entity Relationship Modeling
Contents / Sub Contents	Data Modelling Using the Entity-Relationship (ER) Model: Using High-Level Conceptual Data Models for Database Design.A Sample Database Application Entity Types, Entity Sets, Attributes, and Keys Relationship Types, Relationship Sets, Roles and Structural Constraints. weak Entity Types, Refining the ER Design for the COMPANY Database.
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 5	
Objectives / Learning Outcome	Understand basic concepts of Entity Relationship Modeling
Contents / Sub Contents	Data Modelling Using the Entity-Relationship (ER) Model: ER Diagrams,UML Class Diagrams.
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins

Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 6	
Objectives / Learning Outcome	Understand basic concepts of Enhanced Entity Relationship Modeling
Contents / Sub Contents	The Relational Data Model and Relational Database. Constraints: Relational Model Concepts, Tables, Keys
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practices and Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 7	
Objectives / Learning Outcome	Understand basic concepts of Data Normalization
Contents / Sub Contents	Data Normalization: Conversion of un-normalized form to Normalized form
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practices and Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 8	
Objectives / Learning Outcome	Understand basic concepts of The Relational Algebra and Relational Calculus
Contents / Sub Contents	Conversion of ER model Into Relational Model: Converting entities into relations. Converting attributes into columns
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment

Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 9	
Objectives / Learning Outcome	Understand basic concepts of The Relational Algebra and Relational Calculus
Contents / Sub Contents	Conversion of ER model Into Relational Model: . Implementation of relationships using keys. Different types of database anomalies. Implementation of Relation Model using Microsoft Access
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 10	
Objectives / Learning Outcome	Understand basic concepts of Data Definition Language
Contents / Sub Contents	Data Definition Language DDL statements. Create table. Alter table Constraint implementation
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 11	
Objectives / Learning Outcome	Understand basic concepts of Data Definition Language
Contents / Sub Contents	Data Manipulation Language Structured Query Language fundamentals Select statement Create table, columns, and relationships
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins

Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 12	
Objectives / Learning Outcome	Understand basic concepts of SQL queries (DML)
Contents / Sub Contents	Data Manipulation Language Structured Query Language fundamentals Select statement Create table, columns, and relationships
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 13	
Objectives / Learning Outcome	Understand basic concepts of SQL queries (DML)
Contents / Sub Contents	Data Manipulation Language Structured Query Language fundamentals Select statement Create table, columns, and relationships
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practices and Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 14	
Objectives / Learning Outcome	Understand basic concepts of SQL queries (DML)
Contents / Sub Contents	SQL queries (DML)
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins

Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 15	
Objectives / Learning Outcome	Understand basic concept of Enhanced Entity Relationship Modeling.
Contents / Sub Contents	Mapping ERD to Relational Model
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practicesand Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm
Week 16	
Objectives / Learning Outcome	Understand basic concept of Database Systems
Contents / Sub Contents	Revision and Discussion
Appropriate Teaching Strategies / Methods	Lecture/ Activity based learning
Learning Material	Database Administration: The Complete Guide to Dba Practices and Procedures 2nd Edition by Craig S. Mullins
Appropriate Assessment Tools	Mid, Final, Quiz, Assignment
Assessment Schedule	During Spring 2023 Semester
Others	https://www.oracletutorial.com/oracle-administration/ https://www.tutorialride.com/dbms/database-administrator.htm

Curriculum Contents:

Introduction: A Brief introduction to Database Systems, Data vs. Information Vs Knowledge, why organizations need data? Database System Introduction, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of Using the DBMS Approach, A Brief History of Database Applications, When Not to Use a DBMS, DBMS Concepts and Architectures, Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Classification of Database Management Systems, Data Modelling Using the Entity-Relationship (ER) Model, Using High-Level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, Refining the ER Design for the COMPANY Database, ER Diagrams, Naming Conventions, and Design Issues, Example of Other Notation: UML Class Diagrams, Relationship Types of Degree Higher than Two Generalization and Specialization, Recognize when to use super type/ sub type relationships in data modelling, Develop a sub type/ super type hierarchy for realistic business situation, The Relational Data Model and Relational Database Constraints, Relational Model Concepts, Tables, Keys, Relational algebra, Relational Set Operator, Relational Model Constraints and Relational Database Schemas , Update Operations, Transactions, and Dealing with Constraint Violations, Conversion of un-normalized form to Normalized form, First Normal Form, 2^{nd} Normal Form , 3^{rd} Normal Form, Converting entities into relations, converting attributes into columns, Implementation of relationships using keys, Different types of database anomalies , Data Definition Language, Data Manipulation Language, Structured Query Language fundamentals , Select statement, Create table, columns, and relationships, Aggregate functions, Sum, Average, Count, Maximum, Minimum, Joins, Equi Join, Self-Join, Inner Join, Left Join, Right Join,