Sheikh Zayed Islamic Centre
University of the Punjab, Lahore

Course Outline

Programme	BS Islamic Studies	**Course Code**	**IND-301**	**Credit Hours**	3
Course Title	**Database Management System (DBMS)**			**Semester**	V

Course Introduction

This course introduces database design and creation using a DBMS product. The Emphasis is on data dictionaries, normalization, data integrity, data modeling, and the creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms.

Learning Outcomes

Based on the course description, here are the expected learning outcomes:

1. Understanding of Database Design Principles: Upon completing this course, students should have a solid understanding of fundamental database design principles. They should be able to explain concepts related to data dictionaries, normalization, data integrity, and data modeling.
2. Proficiency in DBMS Usage: Students should be proficient in using a Database Management System (DBMS) product to create and manage databases. They should be able to navigate the DBMS interface and perform tasks such as creating tables, queries, reports, and forms.
3. Normalization Skills: Students should be able to apply normalization techniques to database structures. This includes recognizing and eliminating data redundancy and designing databases that adhere to normalization rules.

Course Content

Week 1:

Introduction to DBMS, Advantages of DBMS, User, and Database Architecture.

Week 2:

Database Application Development Process, Detailed Diagrams, and Database

Week 3:

Entity-Relationship Data Model, Key, and its different types.

Week 4:

Relationships, Cardinality, and Roles in Relationships.

Week 5: Extended Entity Relationship Diagram.
Week 6: Practice Session of ER Data Model.
Week 7: Relations, Keys, and Cardinality Constraints. Relational Algebra and Joins.
Week 8: **Mid Term Exam**
Week 9: Functional Dependency & Normalization.
Week 10: Data Volume and Usage Analysis.
Week 11: Physical Records, Denormalization, Partitioning, and Replication. Structured Query Language (SQL), Data Types, and Rules of the Format.
Week 12: Data Definition Language (DDL) and Data Manipulation Language. Insert and select statements, Where Clause, and Operators (Not, BETWEEN, IN, Like).
Week 13: Order By Clause, Having Clause, Functions, Application Programs, Data Storage Concepts. File Organizations, Hashing, Indexes, Views, Transaction, Database Recovery, Concurrency Control.
Week 14: Revision
Week 15: Presentation of Assignments

Week 16:

Final Term Exam

Textbooks/ Reading Material

1. Thomas M. Connolly, Carolyn E.Begg, "Database Systems: A Practical Approach to Design, Implementation and Management"
2. Jeffery A. Hoffer, V. Ramesh, Heikki Topi, "Modern Database System"

Teaching Learning Strategies

Throughout the courses, lectures and cooperative learning methods will be used. Students will work in small groups, discuss class readings, emphasize interaction with ideas, and come up with questions that will lead the discussion toward deeper understanding of the readings.

Assignment Types and Numbers

Class Participation, Minor and Major Assignments

Major Assignments:

1. Analysis of Articles Based on Academic Writing Standards Discussed in the Classroom.

2. Research Proposal Writing

3. Book/Article Review

Assessment and Examination

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes Classroom participation, assignments, presentations, viva voce, attitude and behavior, direct activities, short tests, projects, practical, reflections, readings, quizzes etc.

3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.