Institute of Computer Science/Information Technology (ICS&IT)
Faculty of Management Sciences & CS/IT (FMCS)
The University of Agricultural Peshawar

Program: BS (CS)-6
Course Title   NoSQL Database Systems
Course Code: CSE-511
Credit Hours: 03
Course Week: 16
Total Credit Hours: 48

Course Objectives

This course introduces the basic concepts of data base and guides towards its application. The course emphasizes on relational data model as well. It also includes normalization and other topics like ER model, Data integrity, concurrency and recovery and recovery techniques, Query optimization and SQL.

Week-1 & 2

-Manual system its merits & demerits
-Traditional file approach its Pros and Cons
-Database Approach

Week-3
-Component of DBMS
        -Database
        -DBMS
        -Database Administrator
        -Application Programmer
        -Data Dictionary & Directory
        -User
Week-4

-Database Architecture
        -External Level
        -Conceptual level
        -Internal Level
-Schemas

Week-5
-Database Application Life Cycle
        -Planning
        -Requirement collection and Analysis
        - Database Design
        - DBMS selection
        -Implementation

-Testing
                        -Operational Maintenance

Week-6
        - Relational Data Model
                -Basic terminologies
                -Relational Integrity

Week-7
        -Entity Relationship Model
                -Entity and its Types
                -Attribute and its types

Week-8
        -Association and its types
        -Keys and its Types

Week-9

        -Normalization concept
        -1NF, 2NF, 3NF

Week-10

        -Transforming ER-Diagram into Relations
        -Basic concepts of Relational Algebra

Week-11

        -Introduction to SQL using ORACLE
        -Data Retrieval Language (DRL)
                - Select, from, where, order by clauses

Week-12

        -Data Manipulation Language (DML)
                -Insert, Delete, Update Statements
        -DDL

Week-13

        -Introduction to Built in Functions
        -Basics single row and Group row Functions

Week-14

.   -Group by clause
- Introduction to Joining & its Types

Week-15

    -Concurrency, its problems & Solutions
    -Recovery and recovery techniques

Week-16

    -Query Optimization Concepts

Quiz/Assignment	10
Midterm Examinations	20
Final Term Examinations	70
Total Marks:	100

Recommended Books:

1. Modern Data Base Management by Jeffery A Hoffer
2. Data Base System by Connolly
3. Student's Guide to SQL 8.0
4. Fundamentals of Database Systems by R.Elmasri and S. Navathe 6th Edition