

### CS 203 Database System

Form number	COURSEWARE OUTLINE/ DOCUMENT				
QEC-ISOB-D1-CW 0.1					
COURSE INSTRUCTOR INFORMATION	Name	Dr. Shahzad, Hafiz Tayyeb, Ms. Faryal, Mr. Suffyan. Mr. Mazhar Hussain			
	email ID	shahzad.sarfraz@nu.edu.pk, tayyeb.javed@nu.edu.pk, faryal.saud@nu.edu.pk, suffiankhursheed@gmail.com, mazhar.h@nu.edu.pk.			
	Contact info.	R			
DEGREE INFORMATION	Program	Batch	Section	Semester	Spring
	BS(CS)	2020	All	Year	2020

COURSE INFORMATION	Course Category C- Core/ E-Elective		Code		Title		Credit hours	
	C-Core		CS 203		Database System		3+1	
	Prerequisite(s)		N/A		N/A			
	TA Required( Yes/ No)	No. of TA(s)	Brief Justification					
	Yes	01	<u>For assignments, tutorials, improvised coordination and IT-Lab</u>					
	Students Consultation hours	Day	Time Slot				Special Instructions	
			From		To			
		Monday		AM		AM		
				AM		PM		
		Tuesday		AM		AM		
			PM	PM				
Wednesday			AM		AM			
			AM		PM			
Thursday			AM		AM			
			PM		PM			
Friday		AM		AM				
		PM		PM				
Saturday		AM		AM				
		PM		PM				

TEXT BOOK(s) INFORMATION	Title of Book		Fundamental of Database system by Ramez Elmasri	Edition 3,4,5
Reference book(s)	1.		Modern Database System by Jeffrey Hoffer	
			Database system by Thomas Connolly	
	Support Material(s)	A		
		B		

**Brief Description of Course:**  
(not more than 250 words)

This is an introductory course on fundamentals of database system. Major part of the course covers basic terminologies of database system. It describes the basic of ERD and Enhanced ERD concepts. It help to design complete architecture of database and its implementation.

**Course Objectives:**

1. To familiarize students with the basic concepts of Database
2. To acquaint them with the basics of Database
3. To enable them to design and implement a well-structured database system
4. To enable to apply possible constraint

**Learning Outcomes**

**At the end of the course students will be expected to have:**

- a. Motivation towards computer science and familiarity of different fields related to it
- b. Problem solving skills and application facility through the use of SQL language
- c. Acquaintance with Database, Front End Development and Information Retrieval to use them as problem solving.
- d. Ability to Design Database and application for daily life problems.

**Courseware Structure: (Mark X where applies)**

<i>Lecture (Lect)</i>	<i>Multimedia (MM)</i>	<i>Exercise (Exer)</i>	<i>IT Labs (Lab)</i>	<i>Case Studies (CAS)</i>	<i>Individual Assignment (Assign)</i>	<i>Group Presentation (G-Pres)</i>	<i>Any other Medium</i>
<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>		

Weeks	Contents/Topics	Assignment / Quiz
<b>Week-01</b>	<ul style="list-style-type: none"> <li>• Introduction to file system and Basic problems in file system</li> <li>• Introduction to database system</li> <li>• DBMS</li> <li>• Advantages of DMBS and Database</li> <li>• Users and its types</li> </ul>	
<b>Week-02</b>	<ul style="list-style-type: none"> <li>• Data model and data abstraction</li> <li>• Type of data models</li> <li>• Schema and instance</li> <li>• Three level architecture of schema</li> <li>• Data independencies and its type</li> </ul>	Quiz – 1
<b>Week-03</b>	<ul style="list-style-type: none"> <li>• Feature of database management system</li> <li>• Architecture and type of databases</li> <li>• Relational database</li> <li>• Basic terminologies of database</li> </ul>	Assignment – 1
<b>Week-04</b>	<ul style="list-style-type: none"> <li>• Keys and its types</li> <li>• Constraints in database</li> </ul>	
<b>Week-05</b>	<ul style="list-style-type: none"> <li>• Introduction to ERD</li> <li>• Entity, Entity type, Entity Instance</li> <li>• Attributes and its type,</li> <li>• Relationships</li> <li>• Degree of relationship</li> <li>• Cardinality of relationship</li> </ul>	
<b>Week-06</b>	Mid Exam-I	
<b>Week-07</b>	<ul style="list-style-type: none"> <li>• Case study</li> <li>• Enhanced ERD and its constraints</li> </ul>	Assignment 2
<b>Week-08</b>	<ul style="list-style-type: none"> <li>• Case studies of EERD</li> <li>• Introduction to DML</li> <li>• Insert update delete and select query</li> </ul>	Assignment 3 Quiz 2
<b>Week-09</b>	<ul style="list-style-type: none"> <li>• Select statement</li> <li>• Different operators</li> <li>• In</li> <li>• And</li> <li>• Or</li> <li>• Between</li> <li>• Not IN</li> <li>• Like</li> <li>• NotNULL</li> <li>• ISNULL</li> <li>• Groupby</li> <li>• Having</li> <li>• OrderBy</li> <li>• Nested query</li> </ul>	

<b>Week-10</b>	<ul style="list-style-type: none"> <li>• Joins</li> <li>• Unions</li> <li>• Difference</li> <li>• Intersection</li> </ul>	Assignment – 4
<b>Week-11</b>	<ul style="list-style-type: none"> <li>• DDL</li> <li>• Create</li> <li>• Alter</li> <li>• Assertion</li> <li>• Trigger</li> <li>• View</li> <li>• DCL</li> </ul>	Quiz – 3
<b>Week-12</b>	Mid Exam-II	
<b>Week-13</b>	<ul style="list-style-type: none"> <li>• Normalization</li> <li>• Design Guide</li> <li>• Anomloies</li> <li>• Normalization</li> <li>• 1Nf</li> </ul>	Quiz – 4
<b>Week-14</b>	<ul style="list-style-type: none"> <li>• 2Nf</li> <li>• 3Nf</li> <li>• BCNF</li> <li>• 4thNf</li> <li>• 5thNF</li> <li>• Case studies</li> </ul>	Assignment – 5
<b>Week 15</b>	<ul style="list-style-type: none"> <li>• Relational algebra</li> <li>• Basic operators</li> <li>• Derived Operators</li> </ul>	Quiz – 5
<b>Week-16</b>	<ul style="list-style-type: none"> <li>• Introduction to transaction processing</li> <li>• ACID Properties</li> <li>• Concurrency problem and its type</li> <li>• Schedule</li> <li>• Conflict Serializability</li> </ul>	

Particulars	Planned Items	Remarks
1. Quizzes	<b>05-08</b>	Announced quizzes
2. Assignments	<b>03-05</b>	Individual assignments