



CSC 311L: Database Management System Lab

North South University

TEXTBOOK(S): Fundamental of Database System, Ramez Elmasri, 6th Ed

GENERAL OVERVIEW

The lab course aims to make students able to apply their knowledge in developing and using relational databases. The labs cover efficient use of SQL for complicated tasks and teach a database language. The main topics of the laboratory applications are: SQL Queries (both simple & advanced), use of triggers, stored procedures and functions for efficient and more secure implementations of database applications. Upon completion of the course, the students learn how to design and develop database applications using one of the major DBMSs.

These labs are not just for students who require extra help; they are an integral part of the course and attendance is mandatory.

To be successful, you will need to devote significant time outside of Labs to studying, practicing skills and solving assignment problems.

ASSESSMENT

Class Attendance	10 points
Weekly Assignments (7)	30 points
Mid	30 points
Final	30 points
Total	100 points

Class Performance

In each Lab class, the students are given one or two problems as Lab test on the current topic or on the previous class topics. There would be no make ups. All the class tests would sum up to 10 points. All the tests would count for the calculation of grade.

Weekly Lab Assignments

Each week, there will be an assignment based on the topics taught in the class, which is to be submitted by the students in the next scheduled class next week. All assignments will sum up to 30 points, which will carry towards the final grade.

Mid

There will be a final exam on the 6th week (Tentative) on all the topics taught in the class, and will carry 30 points towards the final grade.

Final

There will be a final exam on the 9th week (Tentative) on all the topics taught in the class, and will carry 30 points towards the final grade.

Project

There will be a project which will carry 100 points separately. The project is your chance to show what you have learned in the entire course by building a real world application that communicates with a database, performs basic CRUD operations and shows the results to the user. Please refer to **Project Requirements** for more details.

ACADEMIC MISCONDUCT

Cheating and Plagiarism will **not be tolerated at any stage**. These are a serious violation of academic ethical standards and are unfair to other students.

It is expected that all work handed in by a student will be original work that has been done by the individual (or group where applicable).

LAB TOPIC OUTLINE

The **tentative** Lab topics are listed below. Not all topics will be covered in the same degree of detail and the sequence may differ somewhat from the list.

LAB WEEK	TOPIC(S)
Week: ONE	Introduction
	Project: Group Formation
<i>Part A</i>	<ul style="list-style-type: none">• Create database tables• Describe the data types that can be used when specifying column definition

	<ul style="list-style-type: none"> • Table naming rules & Fields Datatypes
<u>Part B</u>	<ul style="list-style-type: none"> • Insert rows into the created table • Create Department Table • Execute a basic SELECT statement
Week: TWO	Getting familiar with queries
	Project: Brief on Project
<u>Part A</u>	<ul style="list-style-type: none"> • Basic SELECT Statement • Selecting All Columns, Specific Columns • Arithmetic Expressions, Using Arithmetic Operators, Parenthesis • Defining a Column Alias
<u>Part B</u>	<ul style="list-style-type: none"> • Eliminating Duplicate Rows • Displaying Table Structure • Concatenation Operator
Week: THREE	Formatting data
<u>Part A</u>	<ul style="list-style-type: none"> • Limiting the Rows Selected • Restricting with Character Strings and Dates • Comparison Conditions • Other Comparison Conditions,
<u>Part B</u>	<ul style="list-style-type: none"> • Using the LIKE Condition • Using the NULL Conditions • Logical Conditions
	Project proposal submission deadline
Week: FOUR	Displaying Data from Multiple Tables
<u>Part A</u>	<ul style="list-style-type: none"> • Obtaining Data from Multiple Tables • Generating a Cartesian Product • Retrieving Records with Equijoins • Joining a Table to Itself • Creating Joins with the ON Clause
<u>Part B</u>	<ul style="list-style-type: none"> • Creating Three-Way Joins with the ON Clause • LEFT OUTER JOIN • RIGHT OUTER JOIN • FULL OUTER JOIN • Additional Conditions
	Project: Requirements Analysis, Features & Relationships
Week: FIVE	Aggregating Data Using Group Functions

<u>Part A</u>	<ul style="list-style-type: none"> • Types of Group Functions • Using the AVG and SUM Functions • Using the MIN and MAX Functions • Using the COUNT Function • Using the GROUP BY Clause
<u>Part B</u>	<ul style="list-style-type: none"> • Using the GROUP BY Clause on Multiple Columns • Illegal Queries Using Group Functions • Excluding Group Results: The HAVING Clause • Nesting Group Functions
	Project: Submission of ER Diagram & Relations Discussion
Week: SIX	Subqueries
<u>Part A</u>	<ul style="list-style-type: none"> • Using a Subquery to Solve a Problem • Subquery Syntax • Single-Row Subqueries • Executing Single-Row Subqueries • Using Group Functions in a Subquery
<u>Part B</u>	<ul style="list-style-type: none"> • Single-row operator with multiple-row subquery • Multiple-Row Subqueries • Using the ANY Operator • Using the ALL Operator
	Project: Submission of ER Diagram & Relations Submission Deadline
Week: Seven	Manipulating Data
<u>Part A</u>	<ul style="list-style-type: none"> • Copying Rows from Another Table • Updating Rows in a Table • Updating Rows Based on Another Table • Example of Merging Rows
<u>Part B</u>	<ul style="list-style-type: none"> • The ALTER TABLE Statement • Adding a Column • Modifying a Column • Dropping a Column • Changing the Name of an Object • Truncating a Table • Add PRIMARY KEY/ FOREIGN KEY constraints • CREATE VIEW

Week: Eight	Controlling User Access
<i>Part A</i>	<ul style="list-style-type: none"> • Creating Users • Granting System Privileges • What is a role? • Creating and Granting Privileges to a Role • Changing Password • Granting Object Privileges • Using WITH GRANT OPTION and PUBLIC key
<i>Part B</i>	
	Project: Query Processing/ Frontend demonstration
Week: Nine	
<i>Part A & Session-2</i>	Functions, Triggers
	Project: Work on Project
Week: Ten	Revision Session, Project Update
Week: Eleven	Lab Final Exam
Week Twelve	Project: Presentation & Submission

Students are assumed to be reading the relevant textbook section while material is being covered in theory lecture.

Thank You.