EMORY
ROLLINS SCHOOL OF PUBLIC HEALTH

DEPARTMENT: INFO

COURSE NUMBER: 521 **SECTION NUMBER: 1**

CREDIT HOURS: 2 **SEMESTER: Spring 2022**

COURSE TITLE: Databases using SQL

INSTRUCTOR NAME: Ramesh Manyam

INSTRUCTOR CONTACT INFORMATION

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COURSE DESCRIPTION

In this course, you'll learn about the basic structure of relational databases and how to read and write simple and complex SQL statements and advanced data manipulation techniques. By the end of this course, you'll have a solid working knowledge of structured query language. You'll feel confident in your ability to write SQL queries to create tables; retrieve data from single or multiple tables; delete, insert, and update data in a database; and gather significant statistics from data stored in a database.

This course will teach key concepts of Structured Query Language (SQL), and gain a solid working knowledge of this powerful and universal database programming language.

This course provides a comprehensive introduction to the language of relational databases: Structured Query Language (SQL). Topics covered include: Entity-Relationship modeling, the Relational Model, the SQL language: data retrieval statements, data manipulation and data definition statements. Homework will be done using databases running in MySQL which students install on their machines and proc SQL in SAS. Students develop a real-world database project using MySQL during the course. Prerequisite: SAS proficiency (BIOS 500 or equivalent)

COURSE LEARNING OBJECTIVE

Upon completion of this course, students will be able to:

- Learn structured query language (SQL) to an intermediate/advanced level.
- Be able to write data retrieval queries and evaluate the result set.
- Be able to write SQL statements that edit existing data.
- Be able to write SQL statements that create database objects.
- Understand the structure and design of relational databases.
- Understand the importance and major issues of database security and the maintenance of data integrity.

INFO Concentration COMPETENCIES:

- Develop public health information systems to support public health efforts
- Assist in the development and adoption of information technology in public health
- Identify software for the interface of data entry and statistical analysis
- Apply standard statistical methods in the analysis of public health information

EVALUATION

The grade assignment will be based on:

8 Homework Assignments (10% each)
Final Exam (20%).

Grade scale*:

- A = 93 -- 100%
- A- = 90 -- 92%
- B+ = 87 – 89%
- B = 83 – 86%
- B- = 80 – 82%
- C = 65 – 79%
- F = <65%

*final grades are not rounded and the lower limit of each letter grade is inclusive, so e.g., 93.0 is an A, while 92.9 is an A-.

COURSE STRUCTURE

The course will use a mixture of lecture notes, labs and homework. Below the INFO competencies are mapped with the representative homework assignment (#1-8 as given in the COURSE CALENDAR) and the final exam.

INFO Concentration Competencies assessed	Representative Assignment
Identify software for the interface of data entry and statistical analysis	Homework assignments (#1-8) and exam will require programming in SQL
Apply standard statistical methods in the analysis of public health information	Homework assignments (#1-3,7) will require interpreting results of a statistical analysis, including interpreting confidence intervals, p-values, etc
Assist in the development and adoption of information technology in public health	Homework assignments (#4,5,8) and exams will involve the create of functions and packages based on understanding specific public health data sets
Develop public health information systems to support public health efforts	Homework assignments (#6) will be assigned that require students to develop code and packages that will be assessed and used by other professional in the realm of public health.

Homework assignments are given below in the COURSE CALENDAR to incorporate the material in the specified learning module.

Software: https://dev.mysql.com/downloads/mysql/ and proc sql using SAS

Students are required to bring a laptop to class to follow along with demonstrations.

COURSE POLICIES

The course will be organized into weekly lectures consisting of a combination of electronic slides, whiteboard problem solving, and computational demonstrations. Students are expected to ask and answer questions in class.

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Equity and Inclusion, 404-727-9877.

RSPH POLICIES

Accessibility and Accommodations

Accessibility Services works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, you must contact the Office of Accessibility Services (OAS). It is the responsibility of the student to register with OAS. Please note that accommodations are not retroactive and that disability accommodations are not provided until an accommodation letter has been processed.

Students who registered with OAS and have a letter outlining their academic accommodations are strongly encouraged to coordinate a meeting time with me to discuss a protocol to implement the accommodations as needed throughout the semester. This meeting should occur as early in the semester as possible.

Contact Accessibility Services for more information at (404) 727-9877 or accessibility@emory.edu. Additional information is available at the OAS website at http://equityandinclusion.emory.edu/access/students/index.html

Honor Code

You are bound by Emory University's Student Honor and Conduct Code. RSPH requires that all material submitted by a student fulfilling his or her academic course of study must be the original work of the student. Violations of academic honor include any action by a student indicating dishonesty or a lack of integrity in academic ethics. *Academic dishonesty refers to cheating, plagiarizing, assisting other students without authorization, lying, tampering, or stealing in performing any academic work, and will not be tolerated under any circumstances.*

The RSPH Honor Code states: "Plagiarism is the act of presenting as one's own work the expression, words, or ideas of another person whether published or unpublished (including the work of another student). A writer's work should be regarded as his/her own property." (http://www.sph.emory.edu/cms/current_students/enrollment_services/honor_code.html)

COURSE CALENDAR

Module	Lecture Topics	Assessment Assigned

1	Database Basics and Structure	
2	Filtering and Retrieving Data Data Retrieval Overview Select Query Intro 2.2 Distinct Alias Order By Wildcard In Select List Computed Column	Hwk 1
3	Sorting and Filtering Data Where Clause Intro Where Clause Comparison Op Like Operator Between Operator Propositional Logic Where Clause Logical OpI	Hwk 2
4	Calculated Fields and Functions Processing of date and time information (TO_DATE, SYSDATE)	
5	Summarizing and Grouping Data Arithmetic functions:AVG, MIN, MAX, COUNT Conversion functions	Hwk 3
6	Working with subsqueries Subqueries Subqueries In Clauses Correlated Subqueries Special Functions Union Intersect Minus	Hwk 4
7	Creating and Using Table joins Join Queries Join Operator Multi Table Joins Outer Joins Grouping	Hwk 5
8	Inserting, updating, deleting data	Hwk 6
9	Table creation and maintenance	Hwk 7
10	Creating and understanding views	Hwk 8
11	API access	
12	EMR as a database	