DS530:
Big Data and Data Management

Jun Shan

Course Introduction

Course Description

This course discusses foundational concepts of data management systems, with emphasis on the relational database design and the usage of Structured Query Language (SQL).

Why SQL?

Relational database is the main stream data management tool in current market (90%, if not more).

SQL is the one and only computer language used in relational database operation.

- The most sought-after skill (keyword) in computer skill category in job searching websites in the past 10 years.
- Frequently tested in job interviews

Teaching Format: Virtual Learning

Remote learning, with instructor led sessions during fixed times.

- Each session consists of lectures and labs that must be completed and submitted on time,
- followed by assignments that must be completed and submitted.

This format will provide you with the flexibility of virtual learning and the discipline of instructor led learning.

Teaching Format: Virtual Learning

- Virtual teaching: A combination of asynchronous and synchronous methods
  - Week 1 (today):
    - ~0.5hr course introduction.
    - ~2hr instructional videos
    - ~1hr interactive lab

Teaching Format: Virtual

- Other weeks: 2hr lecture (video watching/quiz) + 1.5hr lab
  - Lecture: complete before class or in class (6-8p)
  - Lab: after lecture is completed, work on lab in class,
    - Must finish in class (click on submit button)
    - Need to share your screen to show your progress
  - Assignment after each class

Teaching Format: Virtual Learning

- Week 6: 2hr mid term + 1.5hr review
- Week 11: 3.5hr final exam

Labs and Assignments

- Course is designed to have this learning cycle: Lecture > Lab > Assignment > Midterm/Final
  - Labs are designed to get you familiar with questions in assignments. All questions in assignments are in labs.
  - Assignments are designed to get you familiar with questions in tests. All questions in midterm/final are from assignments.
- Strongly encourage you to start working on them ASAP.
- Complete before the day of next class: I can provide feedback in class

Class Schedule

Week	Topic
1	Introduction to Relational Database. CREATE and DROP.
2	Simple INSERT, SELECT, and Entity Relationship Model
3	Normalization and table manipulation.
4	System functions
5	WHERE clause. Set operation.
6	Midterm (2hr) and review.
7	JOIN
8	GROUP BY. View and CTE.
9	User defined functions
10	Data Warehouse. SQL recap.
11	Final Exam

May adjust based on progress.

Grade

1. Lecture videos	8 points	8 times. 1 points per submission.
2. Labs	8 points	8 times. 1 points per submission.
3. Assignments	24 points	8 times. 3 points per submission.
4. Midterm Exam	30 points	Multiple try allowed.
5. Final Exam	30 points	Retake allowed with permission

Late submission/multiple submission is allowed with proper request.

Late submission receives up to 80% of score.

Up to 16 for midterm retakes

Attendance Requirements

You must:

- Show up at 6pm: Email me if you can’t make it
- Complete lectures before class session is over
- Complete labs and assignments before next class
- Take midterm and final on time
- Again: Written request with justified reasons for exceptions
- Again: Late submission will only receive up to 80% of points

Blackboard

- All course materials are posted on Blackboard
  - Lecture PPT (PDF)
  - Lecture recording video
  - Labs
  - Assignments
  - Sample files/supporting files

Textbook

- **A Guide to SQL** by Philip J. Pratt, Mary Z. Last

  Currently 10th edition, but older editions are OK too.

  We will have our own teaching schedule but the book can serve as a reference to key concepts and syntax.

- Internet: Google

  Key skill to use SQL in real world

Additional Help

- Contact email: jshan@saintpeters.edu

Feel free to let me know if you need help. If you need to have a discussion with me, send me an email with 3-4 time slots that work for you. I will pick one and setup a zoom session.

School Policies

Instructional Continuity Plan

This course will be conducted continuously online even if Saint Peter's University closes its campus access.

Students with Special Needs

Students requiring special accommodations should present the appropriate paperwork after having their accommodations determined by the Academic Dean’s Office.

Title IX Compliance

In the event that you choose to write or speak about having survived sexualized violence, including rape, sexual assault, dating violence, domestic violence, or stalking, Saint Peter's University policies require that, as your instructor, I share this information with the Title IX Coordinator, Elena Serra. Elena or a trained member of her team will contact you to let you know about support services at Saint Peter's as well as options for holding accountable the person who harmed you. Whereas, you are not required to speak with them, they will share resources with you.

Academic Conduct

In order to maintain academic integrity at Saint Peter's University, the University community will not tolerate any forms of academic dishonesty. Examples of unacceptable forms of dishonesty include cheating, copying, fabrication, plagiarism, unauthorized collaboration, submitting someone else's work as one's own; dishonesty through the use of technology such as sharing disks, files, or programs; access to, modification of, or transfer of electronic data, system software or computing facilities. The intent of this policy is to promote academic integrity, and to arrest all forms of academic dishonesty.

When incidents of academic dishonesty occur and the faculty member chooses to submit a formal complaint of the incident to the Academic Dean, the Dean will refer the complaint to the Academic Integrity Review Board, which is composed of faculty, academic administrators, and the Dean of Student Development.

The Academic Integrity Review Board will review the circumstances surrounding the incident and make a recommendation of appropriate disciplinary action. Penalties imposed on the student who violates this policy may vary from failing the unit of work to expulsion from the University.