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# DS530: Big Data and Data Management

Jun Shan

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# 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?

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, and has been increasingly used for non-relational database operations.

- 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
  - Lecture: Requires active participation (not only Zoom attendance)
  - Lab: hands-on lab in class,
    - Must 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 Database and data modeling.
2	CREATE and DROP. Simple INSERT, SELECT.
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. Participation	18 points	2 points per class.
2. Labs	18 points	2 points per submission.
3. Assignments	18 points	2 points per submission.
4. Midterm Exam	30 points	
5. Final Exam	20 points	

The total of participation, labs, and assignments are 50 point. You are allowed to miss two participations, labs, or assignments.

Late submission/multiple submission is allowed with proper written request (email). Request via Zoom chat is not acceptable.

# Participation Requirements

You must:

- Show up at 6pm: Email me if you can't make it
- Answer questions. Share your progress during lab.
- Work on labs and assignments before next class
- Take midterm and final on time
- Again: Written request with justified reasons for exceptions
- Again: Participate, not just sit in Zoom sessions.

# Blackboard

- All course materials are posted on Blackboard
  - Lecture PPT (PDF)
  - 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, ChatGPT, etc.

Key skill to use SQL in real world

# Additional Help

- Contact email: [jshan@saintpeters.edu](mailto: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

Academic accommodations must be approved by the University Disability Services Coordinator & Dean of Academic Engagement and Student Success. Students may deliver completed Accommodation Request Form copies in person or by mail to the Center for Academic Success and Engagement to the University Disability Services Coordinator & Dean of Academic Engagement and Student Success, 2641 John F Kennedy Blvd, Jersey City, New Jersey, 07306.

Matriculated students may also submit applications or supporting documentation by email to [accommodations@saintpeters.edu](mailto:accommodations@saintpeters.edu). Students electing to submit applications through email must use their Saint Peter's University email address.

# Title IX Compliance

Saint Peter's University is committed to maintaining a safe and inclusive environment. Under Title IX, discrimination based on sex, including sexual harassment and violence, as well as discrimination against pregnant and parenting students, is strictly prohibited. If you experience or witness such issues, resources are available to support you. Please note that while I am here to help, I am a mandated reporter and may be required to report incidents of sexual misconduct to the Title IX Coordinator. Students experiencing pregnancy or related conditions may voluntarily initiate contact with the Title IX Office to request reasonable adjustments available under Title IX. For more information or to report an incident, visit the SPU Title IX Website or contact Travis Whisler, Title IX Coordinator, at [titleix@saintpeters.edu](mailto:titleix@saintpeters.edu).

# Academic Conduct

The University, as a matter of policy, does not condone or tolerate academic dishonesty, such as cheating or plagiarism. Students who cheat or submit plagiarized work are liable to receive a failing grade for the assignment and/or the course at the discretion of the instructor. In more serious cases, the student who cheats or plagiarizes is liable to be suspended or dismissed from the University by the appropriate dean. Instructors submit Academic Dishonesty Reports to the appropriate dean and these reports are included in students' permanent files.

Any of these acts may result in one of the following: a failing grade for an assignment, a failing grade for the course, suspension from the University, or dismissal from the University.

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