# IST 210.008: Organization of Data - Fall 2019

## (M/W/F 10:10AM - 11:00AM)

## Location: Westgate Bldg W201

| Dr. Patrick Dudas [he,him,his] (Pat-trick Do-dis) | E-mail: pmd19@psu.edu | Office Hours: M, F: 9AM – 10AM IST E379A | |
|---|---|---|---|
| LA/TAs | LA: Simone Ojeikere Si-mone Oh-jeh-kiery | LA: Hojin Ryoo HOE-JIN | TA: Maryam Zokaeinikoo Mærˈjæm Zo-ka-ee-nɪ-ku |
| Office Hours | Tu/Th 4:30-5:30 | W/F 5-6PM (Café) | Tu/Th 12-1PM E356 |

Recommended Text:

(Textbook is NOT a must for our course. If you can follow up the lectures, no need to buy one.)

Database Systems (2017); Authors: Carlos Coronel & Steven Morris; Edition: 13TH 19; Publisher: CENGAGE L; ISBN: 9781337627900

The Engineering Library has this book on reserve.

**ACADEMIC INTEGRITY STATEMENT**

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

**DISABILITY ACCOMMODATION STATEMENT**

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides contact information for every Penn State campus

(http://equity.psu.edu/sdr/disability-coordinator)

For further information, please visit Student Disability Resources website

(http://equity.psu.edu/sdr/)

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines

(http://equity.psu.edu/sdr/guidelines)

If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

**COUNSELING AND PSYCHOLOGICAL SERVICES STATEMENT**

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Counseling and Psychological Services at University Park (CAPS)

(http://studentaffairs.psu.edu/counseling/) : 814-863-0395

Counseling and Psychological Services at Commonwealth Campuses

(http://senate.psu.edu/faculty/counseling-services-at-commonwealth-campuses/)

Penn State Crisis Line (24 hours/7 days/week): 877-229-6400

Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

**STATEMENT ON NONDISCRIMINATION AND HARASSMENT**

The PENNSYLVANIA State University is committed to the policy that all persons shall have equal access to programs, facilities, admission and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. (Policy AD42: Statement on Nondiscrimination and Harassment): http://guru.psu.edu/policies/AD42.html.

**AN INVITATION: SPEAKERS OF ENGLISH AS A SECOND LANGUAGE**

If you are uncomfortable with public speaking or writing in English, I strongly encourage you make an appointment to meet with me privately during the first two weeks of this class to establish ways to ensure you are comfortable in completing the required assignments and speaking in class.

EPPIC (English for Professional Purposes Intercultural Center) is an academic center at Penn State designed to help international students and scholars enhance their advanced academic and professional English for course papers, oral presentations, job interviews, publications, and more. Our center offers one-on-one consultations, workshops, and weekly speaking skills groups.

Additional information about our services for Fall 2019 is available https://eppic.la.psu.edu/services.

**CLASSROOM POLICY**

Students are asked to attend class on time and remain through the entire class. Cell phones are to be turned off before entering and remain turned off for the duration of the class. Students with laptops will be subject to extra questioning as technology should not serve as a distraction.

Exams will be closed-book and all electronic items of any kind (laptops/cell phones/PDAs/calculators, etc.) will not be permitted for use during the exam. Also, grades will not be reduced or assigned any penalties for bringing a cell phone in during an exam and if the device happens to ring/buzz/sing/dance while taking an exam, I will look at you with disgust. Just please make sure cell phones are definitely off for exams.

<u>**Class Background:**</u>

Introduction to concept of databases including the storage, manipulation, evaluation, and display of data and related issues. IST 110 is recommended as preparation for IST 210. IST 210 Organization of Data (3) As the database management software becomes one of the critical components in modern IT applications and systems, a solid understanding of the fundamental knowledge on the design and management of "data" is required for virtually any IT professionals. In a business setting, such IT professionals should be able to talk to the clients to derive right requirements for database applications, ask the right questions about the nature of their entities and in-between relationships in their business scenarios, analyze and develop an effective and robust design to address business constraints, and react to the existing database designs as new needs arise. Modern IT professionals should be able to guide a company in the best use of the diverse database-related technologies and applications toward the "Big Data" era. As such, IST 210 aims to prepare students for obtaining fundamental understanding on the database concepts and practical skills to analyze and implement a well-defined database design. In particular, IST 210 introduces physical database design, data modeling, relational model, logical database design, SQL query language, and instructors' choices on database applications and advanced concepts. Students will learn to use a real-world commercial or open-source database management system, too. Upon taking IST 210, students should be able to understand the implications and future directions of databases and database technologies.

<u>**Course Requirements**</u>:

Chapter Assignments (CA) (14 x 20 points = 280 points) - There will be 14 x chapter assignments during the term.

Notes:

- These are listed on Canvas right after class and will need to be completed over the weekend (due Sunday @ 11:59PM).
- You can resubmit these Canvas quizzes as many times as you would like.

- For your first attempt, please do not use your classroom notes/slides or book. Approach this like a quiz. You can take notes during your first attempt, but do not utilize use any outside help. Second attempt and on, feel free to use your classroom notes/slides or book to answer the questions.

Labs (100 points) – There will be a paper due at the end of the semester. More information will be provided as the semester progresses.

Exams (50 points for Midterm, 100 points for Final) - The exam is a closed-book, closed notes, in-class exams. The Final will be cumulative.

Team Project (TP) (100 points) - There will be a team project worth 100 points. Students will work in teams to solve real-world problems, generate project reports, and present their work in class presentations.

Academic Integrity Acknowledgment (10 points)

Total points: 590 points

**Attendance**

- I take attendance and is straight-forward.

- You can have 5 missed classes, no strings attached. You do not have to let me know.

  - Exceptions: Test days are mandatory. Also, if it is a group project work day. You have to let your group know you will be missing the class.

- After 5 days, excuses are needed and needed to be made prior to class. If not, -10 points for each miss.

Grading: Grading will be based on performance of the requirements specified above. Of the possible 590 points that might be earned, grades will be as follows:

|  | 87% - 90% B+ | 77% - 80% C+ |
|---|---|---|
| 94% - 100% A | 84% - 86.99% B | 70% - 76.99% C |
| 90% - 93.99% A- | 80% - 83.99% A- |  |
|  |  | 60% - 69.99% D |

Class Schedule (Subject to change!)

| | To Do (this week) | |
|---|---|---|
| Week of | Aug 26th | |
| 26-Aug | Introduction | Read Chapter 1 |
| 28-Aug | Jupyter Introduction | |
| 30-Aug | Jupyter Introduction | |
| Week of | Sept 2nd | |
| 2-Sep | No Class | Labor Day |
| 4-Sep | Database Systems | |
| 6-Sep | Database Systems | CA - Due Sunday @ 11:59PM |
| Week of | Sept 9th | |
| 9-Sep | Data Models | |
| 11-Sep | Data Models | |
| 13-Sep | Data Models | CA - Due Sunday @ 11:59PM |
| Week of | Sept 16th | |
| 16-Sep | Relational Database Model | |
| 18-Sep | Relational Database Model | |
| 20-Sep | Relational Database Model | CA - Due Sunday @ 11:59PM |
| Week of | Sept 23rd | |
| 23-Sep | Entity Relationship Modeling | |
| 25-Sep | Entity Relationship Modeling | |
| 27-Sep | Entity Relationship Modeling | CA - Due Sunday @ 11:59PM |
| Week of | Sept 30th | |
| 30-Sep | Advanced Data Modeling | |
| 2-Oct | No Class | |
| 4-Oct | Advanced Data Modeling | CA - Due Sunday @ 11:59PM |
| Week of | Oct 7th | |
| 7-Oct | Normalization of Databases Tables | |
| 9-Oct | Normalization of Databases Tables | |
| 11-Oct | Normalization of Databases Tables | CA - Due Sunday @ 11:59PM |
| Week of | Oct 14th | |
| 14-Oct | Structured Query Language | |
| 16-Oct | No Class | |
| 18-Oct | Structured Query Language/review | CA - Due Sunday @ 11:59PM |
| Week of | Oct 21st | |
| 21-Oct | Advanced SQL | |
| 23-Oct | Advanced SQL | |
| 25-Oct | Midterm | CA - Due Sunday @ 11:59PM |
| Week of | Oct 28th | |
| 28-Oct | Database Design | |
| 30-Oct | Database Design | |
| 1-Nov | Database Design | CA - Due Sunday @ 11:59PM |
| Week of | Nov 4th | |
| 4-Nov | Transaction Management/Concurrency Control | |

| Date | Topic | Assignment |
|---|---|---|
| 6-Nov | Transaction Management/ Concurrency Control | |
| 8-Nov | Transaction Management/ Concurrency Control | CA - Due Sunday @ 11:59PM |
| Week of | Nov 11th | |
| 11-Nov | Db Performance Tuning/Query Optimization | |
| 13-Nov | Db Performance Tuning/Query Optimization | |
| 15-Nov | Db Performance Tuning/Query Optimization | CA - Due Sunday @ 11:59PM |
| Week of | Nov 18th | |
| 18-Nov | Data Warehouses | |
| 20-Nov | Data Warehouses | |
| 22-Nov | Data Warehouses | CA - Due Sunday @ 11:59PM |
| Week of | Nov 25th | |
| 25-Nov | No Class | Thanksgiving Break |
| 27-Nov | No Class | Thanksgiving Break |
| 29-Nov | No Class | Thanksgiving Break |
| Week of | Dec 2nd | |
| 2-Dec | Big Data and NoSQL | |
| 4-Dec | Big Data and NoSQL | |
| 6-Dec | Big Data and NoSQL | CA - Due Sunday @ 11:59PM |
| Week of | Dec 9th | |
| 9-Dec | Database Connectivity and the Web | |
| 11-Dec | Database Connectivity and the Web | |
| 13-Dec | Database Connectivity and the Web/review | CA - Due Sunday @ 11:59PM |
| Week of | Dec 16th | |
| | Final | |