GEOG 475/575
Digital Compilation and Database Design

Course Delivery Method: in-person (https://www.pdx.edu/course-delivery-methods)

Prerequisite: GEOG 488/588, or instructor approval

Course Objectives

GEOG 475/575 covers the theory and practice of designing, implementing, and managing geospatial databases that can be used in a wide variety of applications, including natural resource management, transportation and location analysis, census and land survey, and urban planning (to name just a few). The first half of the course will deal primarily with data modeling and database design, while the second half of the course will focus more on topics specific to *geospatial* databases. After completing the course, students will be able to design, develop, and manage a geospatial database, and understand the critical issues of its design and operation for their research projects, or most GIS data management tasks.

Text and Readings

The following three textbooks are required:

> Forta, Ben. *Sams Teach Yourself SQL in 10 Minutes*. **Fifth** Edition. Pearson Education, 2020. (ISBN-13: 978-0-13-518279-6)
>
> Churcher, Clare. *Beginning Database Design : From Novice to Professional*. 2nd ed. Expert's Voice in Databases. New York, NY: Apress, 2012. (ISBN-13: 978-1430242093)
>
> Obe, Regina O., and Hsu, Leo S. *PostGIS in Action*.

There will be additional readings (generally articles) assigned throughout the term. These additional readings will be made available on D2L.

Exams

There will be one open-book, take-home midterm exam during week 6 of the term. There is no final exam; instead, you will complete a final project during the last part of the term.

Weekly Questions

It is important to keep current with the readings. Each week, a set of discussion questions related to the readings for that week will be assigned. You will turn in short answers to these questions each week, and you should come to class prepared to discuss the questions assigned for that week.

Additionally, a graduate student will lead the discussion around these questions. A sign-up sheet will be available during the first week of class. Discussion should last 30-45 minutes.

Computer Lab Exercises

There will be weekly lab exercises. During the lab sessions, you will complete self-paced computer-based exercises that will allow you to acquire skills and to apply concepts related to the course material.

Final Project

Instead of a final exam, you will complete a final project. For the project, you will be provided with a research question, and will be asked to use the knowledge, skills, and techniques that you learned during the term to answer the research question. You will have about a week and a half to complete the project.

Grading

	Geog 475	Geog 575
weekly questions (discussions led by grad students)	20%	25%
labs	40%	35%
midterm exam	20%	20%
final project	20%	20%

Grading break points will be near 90% (A), 80% (B), and 70% (C). However, exact break points will depend on overall class results.

Academic Integrity

You are responsible for the content and integrity of the academic work you submit. The guiding principle of academic integrity shall be that your submitted work, examinations, and projects must be your own work. Cutting and pasting sources from the internet is considered plagiarism. If you need help determining what is or is not plagiarism, please talk to the instructor. Plagiarism is a form of academic misconduct, and may result in academic sanctions as described in the PSU Code of Student Conduct (https://www.pdx.edu/dos/psu-student-code-conduct).

Access and Inclusion for Students with Disabilities

PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment.

If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. To contact the DRC, call 503-725-4150, email drc@pdx.edu, or visit the DRC virtual front desk between 12 PM and 4 PM Monday through Friday at https://pdx.zoom.us/j/379914326.

- If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and to discuss your accommodations.
- Students who need accommodations for tests and quizzes are expected to schedule their tests to overlap with the time the class is taking the test.

Title IX Reporting Obligations related to Discrimination and Harassment

As an instructor, students frequently come to me for assistance in matters that are not related to the course material. Please be aware that PSU's policies require faculty members to report any instance of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about these experiences with an employee who does not have these reporting responsibilities and can keep the information confidential, please contact one of the following campus resources (or visit https://www.pdx.edu/sexual-assault/get-help):

- Confidential Advocates (503-725-5672) or psuwrc.youcanbook.me (for matters regarding sexual harassment and interpersonal/sexual violence)
- Center for Student Health and Counseling (SHAC): 1880 SW 6th Ave, 503) 725-2800
- Student Legal Services: 1825 SW Broadway, (SMSU) M343, (503) 725-4556

For more information about Title IX, please complete the required student module, Creating a Safe Campus, in your D2L (http://www.pdx.edu/sexual-assault/safe-campus-module).

Flexibility Statement

The instructor reserves the right to modify course content and/or substitute assignments and learning activities in response to institutional, weather, or class situations.

Homework* Schedule

Assignment	Start	In-Class Discussion	Due
HW #1			
HW #2			
HW #3			
HW #4			
HW #5			
HW #6			

* Weekly question assignments for discussion in-class.

Course Schedule

Week	Class Topic(s) / Readings	Lab
1	• course overview • intro to databases and RDBMSs Churcher: chapters 1-3 NYT article, on D2L	Lab 1: intro to SQL, basic queries
2	• data modeling	
3	Churcher: ch 4-6 Bian (2007), on D2L	Lab 2: filtering, manipulating, and summarizing data
4	• normalization Churcher: ch 7-9	Lab 3: combining queries, and joining tables
5	• discussion and review no new readings	Lab 4: updating data and tables
6	**Midterm** Obe: ch 1-3 (note: read by week 7)	
7	• spatial databases readings from week 6 continue	Lab 5: working with spatial data
8	• spatial relationships Obe: ch 9-10 Zeiler (2010), ch 3, on D2L	Lab 6: census data
9	• routing • final project info readings TBD	Lab 7: routing
10	*work on final project*	*work on final project*
11	TBD	

Notes:
Weekly readings indicated in blue.