GEO 5934
Spatial Data Structures and Algorithms
Spring 2015
Syllabus

Instructor:	David C. Folch
Contact:	dfolch@fsu.edu
Office Hours:	Friday 11:00am–noon or by appointment
Office:	Bellamy 308
Time:	Thursday, 9:30am–noon

1 Course Overview

A fundamental challenge for GIScientists is representing the real world in a digital structure. Since computational resources are finite, these digital representations are inherently approximations of the phenomena that we are studying. By understanding the ways in which GISystems store and manipulate data, we are better able to manage the representational and computational trade offs that underpin the results of spatial research.

This course explores the structure and functionality of GISystems through the lens of the database. We focus on core data structures and modeling concepts in databases to understand the technical aspects of GISystems. The course will balance the theoretical grounding that underlies databases with practical material on database design and implementation.

2 Learning Outcomes

- Understand the unique challenges posed by spatial data in the database environment

- Understand the concepts of designing a database for general and/or spatial data

- Develop and query relational databases using Structured Query language (SQL)

3   Textbook

Worboys, M.and Duckham, M.(2004) *GIS: A Computing Perspective.* CRC Press.

4   Grading

Grading in the course will be based on the following point system:

Component	Count	Points	Total Points
Exercises	10	100	**1000**
Project	1	400	**400**
Participation	1	100	**100**
Grand Total			**1500**

Table 1: Point Distribution

Exercises   Approximately ten exercises will be assigned during the semester. These will be turned in and graded. Late assignments will receive a score of zero.

Final Project   Each student will submit a research paper at the end of the semester.

Participation   Active involvement is expected of all students during class meetings.

5   Schedule

We will meet 14 times during the semester. The tentative schedule for the course is reported in Table 2. As this is a small class, the schedule is expected to evolve over the semester in line with student progress and interests.

	Topic	Chapter
Jan. 8	Introduction	1
15	Database design	2
22	Database design	2
29	SQL	2
Feb. 5	SQL	2
12	Normalization	2
19	Representations of space	3
26	Models of spatial data	4
Mar. 5	Computational issues in a GIS	5
12	Spring Break – No Class	
19	Spatial algorithms	5
26	GIS storage and performance	6
Apr. 2	Accessing spatial data	6
9	Uncertainty	9
16	Presentations	10
23	AAG Meetings – No Class	

Table 2: Tentative Course Schedule

6 University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

7 Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/Academics/Academic-Honor-Policy.)

8 Americans with Disabilities Act

Students with disabilities needing academic accommodation should:

1. register with and provide documentation to the Student Disability Resource Center; and

2. bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:
Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/