

Principles of Geographic Information Systems

GEOG 358, Spring 2008

Instructor: Dr. Xingong Li

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Office Hours: Monday and Wednesday 10:00am—11:30 or by appointment

Office: 409 Lindley Hall

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Class Meetings: Monday, Wednesday 12:30—1:45pm **Class Room:** Lindley 228

Labs: Tuesday, 1:00—2:50pm or Friday, 12:00—1:50pm **Lab Room:** Lindley 310

Graduate Assistant: Kyle Wamser

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Textbook:

1. Paul Bolstad (2005) *GIS Fundamentals: a First Text on Geographic Information Systems* (2nd edition), Eider Press, White Bear Lake, Minnesota. (required)
2. Environmental Systems Research Institute (ESRI) (2004) *Getting to Know ArcGIS* (2nd edition), ESRI Press, Redlands, California. (recommended)

Course Objectives:

This course covers the fundamental concepts in geographic information systems (GIS) and its relevance in today's world. Major topics include data models, spatial coordinate systems, data collection, management, analysis, visualization, terrain analysis, and spatial interpolation. You will learn what GIS is, what it can be used for, and how to perform basic spatial analysis using GIS. Laboratory exercises in this course provide practical experience that complements the concepts discussed in the lectures. The specific GIS software we will use is ESRI's ArcGIS desktop applications--ArcMap, ArcCatalog and ArcToolbox.

Tentative Course Outline:

Week	Lectures	Labs	Reading
1 1/23	Course overview	No Lab	Chapter 1
2 1/28, 30	Introduction to GIS Data models	Introduction to ArcCatalog	Chapter 2
3 2/4, 6	Data models Coordinate systems	Introduction to ArcMap	Chapter 3
4 2/11, 13	Coordinate systems	Map projection and measurement	Chapter 3
5 2/18, 20	Data entry and editing	Datum determination and conversion	Chapter 4
6 2/25, 27	Digital Data	On-Screen digitizing and image registration	Chapter 7
7 3/3, 5	GPS	Building a GIS database	Chapter 5
8 3/10, 12	Review for mid-term Middle Term Exam	No Lab	

9 3/17, 19	No class Spring Break	No Lab	
10 3/24, 26	Aerial and satellite images	Using GPS for field data collection	Chapter 6
11 3/31, 4/2	Attribute data and tables Vector spatial analysis	Remote sensing applications	Chapter 8 Chapter 9
12 4/7, 9	Raster spatial analysis	Queries and joins	Chapter 9 Chapter 10
13 4/14, 16	Guest lecture AAG Meeting (no class)	Buffer and overlay	
14 4/21, 23	Raster spatial analysis	Cartographic modeling	Chapter 13
15 4/28, 30	Terrain analysis	Terrain visualization and viewshed analysis	Chapter 11
16 5/5, 7	Spatial interpolation Final exam review	Final project	Chapter 12
17 5/15	Final Exam 10:30—1:00pm		

Course Evaluation:

Your grade will be based on **six** parts:

Mid-term exam:	20%
Final exam:	20%
Labs:	30%
Assignments:	10%
Final project:	15%
Quizzes/Participation:	5%

Final grade will be on a straight scale, not on a curve. If you all do well, you will all get an A. Letter grades will be determined based on the standard grading scale, i.e., A: ≥ 90 ; B: 80.0 to 89.9; C: 70.0 to 79.9; D: 60.0 to 69.9; F: < 60 .

Exams:

The mid-term exam will cover the material for the first half of the class, and the final exam from the second half. The final is **not** comprehensive, but since we will be building on concepts throughout the semester, material from the first half of the semester will invariably be part of the final.

Labs:

There will be 12 computer labs. Lab TA will explain lab policies for the class. Please note that lab counts for 30% of your final grade. Labs make up the bulk of your final grade because I feel that it is in the labs that you will gain the practical knowledge of how to perform GIS analyses.

Assignments and Final Project:

I will have you write two application reports and finish a final project. Details on each of these assignments and the final project will be handed out during the semester.

Quizzes/Participation:

I will give several short and unannounced quizzes over reading and lecture material throughout the semester. In addition, I will monitor your participation in the lecture. This portion of your grade is relatively small, but it will likely determine the difference between letter grades. Please come prepared to answer questions about the material in the reading.

Attendance:

Attendance to classes is essential and expected. I will not take attendance but your participation in lectures will be noted and included in your quiz grade. Also, since the lectures build on one another, it is important that you attend each class session so you don't fall behind in the work. If you miss class you must notify me beforehand, if possible (by email), or bring a valid, official note explaining the reason for your absence, in order to receive a make-up for quizzes and exams. If you miss lecture notes, try to get them from a classmate. **Advanced notice to me about situations that could affect your attendance/performance in course will be most beneficial to you.**

Academic Misconduct:

Academic dishonesty/misconduct **will not be tolerated in any way**. This holds for both the lecture and the lab. Those caught will be dealt with according to departmental and university policies (see <http://www.ku.edu/~handbook/codes.shtml>).

**Any student who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact me personally as soon as possible so that we can discuss accommodations necessary to ensure full participation and facilitate the educational opportunity.*