

GEOG 5100 – Spatial Data Analysis

Instructor

Professor Desheng Liu
Email: liu.738@osu.edu
Office: 1189 Derby Hall
Phone: 614-247-2775
Office Hours: Tu 12:45-2:15PM, or by appointment

Teaching Assistant

Mr. Jialin Li
Email: li.7957@buckeyemail.osu.edu
Office: 1131 Derby Hall
Office Hours: Wed 11:10-12:10PM, Th 8:20-9:20AM or by appointment

Lectures/Labs

0135 Derby Hall, TuTh 2:20-3:40PM

Course Website

The course schedule, announcements, lecture notes, homework and lab assignments, and other course information will be posted on Carmen (<https://carmen.osu.edu>).

Required Textbook

[R] Rogerson, P.A. (2015). *Statistical Methods for Geography: A Student's Guide (Fourth Edition)*, Sage Publications, London.

Prerequisites

Statistics 1450 (145), or equivalent, or graduate standing in geography, or permission of the instructor.

Course Description and Objectives

This course provides an introduction to spatial data analysis in quantitative geographic research. The emphasis is on the statistical analysis of geographic data. The objectives are (1) to introduce students a range of fundamental statistical and spatial analysis methods used in geographic problem solving, (2) to present students real-world examples from a variety of topical areas in geography, and (3) to provide students a basis for understanding more advanced geographic data analysis methods.

Grading Policy

Your final course grade will be based on the following weighting of assessment components:

Class Exercises	20%
Homework	10%
Labs	30%
Midterm Exam	15%
Final Exam	25%

- Class exercises will be frequently given throughout the semester. They are designed to help students understand the lecture notes and do well in exams. Students will receive credits by showing efforts in class but no make-ups will be given for absence.
- All assignments should be turned in on time. Late submissions will be penalized by 10% per day late.
- There will be a midterm exam during the semester as well as a final exam. Students must take all exams to receive credits. No make-up exams will be given unless legitimate documents for medical or personal emergency are presented **prior to** the exams.

Final course grades will be assigned based on the following grading scale:

A: 93–100 | **A-:** 90–92 | **B+:** 87–89 | **B:** 83–86 | **B-:** 80–82 | **C+:** 77–79

C: 73–76 | **C-:** 70–72 | **D+:** 67–69 | **D:** 60–66 | **F:** below 60

Student Responsibility

You are responsible for your own learning. I am here solely to facilitate your learning. I will help you as much as I can, but learning the material is ultimately up to you. This includes:

- Attending class meetings or getting assignments and notes from others if you miss class;
- Asking questions when you have them, either in class or out of class;
- Doing the assigned homework and labs on time and participating in class;
- Contacting me if you have difficulties.

Communication Devices

Cell phones and other communication devices must be either turned off or put on vibrate during class. Please refrain from texting during class as a courtesy to those sitting around you. All electronic devices other than a calculator must be shut off and put away during examinations.

Academic Misconduct

Please help maintain an academic environment of mutual respect and fair treatment. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term academic misconduct includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest

practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). Academic misconduct will not be tolerated and will be dealt with procedurally in accordance with university policy, which is available at <http://oaa.osu.edu/coam.html>. For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Receiving an 'I' for the Course

You cannot receive an incomplete for the course unless 70% of the work in the course has been completed. Extenuating circumstances will be handled on a case-by-case basis.

Weekly Topics

A tentative outline of weekly topics is given below. Students should check the course website frequently for updates.

Week	Topics	Readings
1	Introduction	[R] 1
2	Geographic data	[R] 1.7, 2.1
3	Descriptive statistics	[R] 2
4	Probability (I)	[R] 3
5	Probability (II)	[R] 4
6	Sampling	[R] 5.7
7	Estimation	[R] 5.1~5.2
8	Midterm Exam	
9	Hypothesis testing (I)	[R] 5.3~5.6
10	Hypothesis testing (II)	[R] 5.3~5.6
11	Analysis of variance	[R] 6
12	Correlation	[R] 7
13	Regression (I)	[R] 8, 9
14	Regression (II)	[R] 11
15	Spatial autocorrelation	[R] 10
16	Spatial pattern analysis	[R] 10
Midterm Exam: 2:20-3:40PM, Tu, Oct. 9 Final Exam: 4:00-5:45PM, Fr, Dec. 7		