

# **GEOG 4103 – Introductory Spatial Data Analysis**

## **Instructor**

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## **Teaching Assistant**

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Office Hours: Tu 2:30-3:30PM; Wed 10:00-11:00AM or by appointment

## **Lectures/Labs**

0140 Derby Hall, TuTh 9:35-10:55AM

## **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**

Math 1116 or 1130 or above, or Math Placement Level M or L, or permission of instructor

## **Course Description**

This course provides an introduction to statistical analysis of spatial data emphasizing spatial thinking. In this course fundamental statistical methods are presented in the context of geographic sciences. Students will develop a fundamental understanding of statistical concepts and the tools geographers use to solve statistical problems. Lectures will introduce students a range of fundamental statistical and spatial analysis methods used in geographic problem solving. Labs will help students develop skills to analyze and interpret spatially referenced data using computer software. This course emphasizes hands-on experience and practical understanding. Real-world examples from a variety of topical areas in geography will be used in the lectures and labs.

## 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 lectures 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](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://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