



SAN DIEGO STATE UNIVERSITY

Geography 385¹	Instructor: Dr. Li An
Spatial Data Analysis	Office hours: MW 2:00 pm to 3:00 pm & by appt.
Fall 2014	Office: Storm Hall 308B
Class meet at Storm Hall 320	Phone: 619-594-5932
Time: MW 3:30 pm to 4:45 pm	lan@mail.sdsu.edu
Teaching Assistant: William Orihuela; billorihuela@gmail.com; Storm Hall 309D; Office hours: M 5-6pm, Th 12-1pm. Phone: (808)-426-6476	

Course Outline

This course is designed to introduce you to the use of statistical methods in geographic research. This is a second course in statistics and there is a prerequisite of a lower division mathematical statistics course—Statistics 250 or its equivalent. Geographers make extensive use of the same statistical methods utilized in other social and natural sciences, but also employ techniques that are specifically designed to quantify data that are spatially arranged. Our goals in this class are (1) to understand the underlying logic of the basic statistical tools used in Geography; (2) to learn how to identify the appropriate statistical techniques to apply in specific research settings; and (3) to correctly calculate and interpret those statistics. In doing so, the course will provide a building block for more advanced courses in spatial statistical analysis.

The required books for you to buy are:

J. Chapman McGrew, Jr., Arthur J. Lembo, Jr., and Charles B. Monroe, **An Introduction to Statistical Problem Solving in Geography, 3rd Edition, 2014 (Long Grove: Waveland)²**

You should also own a **hand-held calculator**--you will need it for homework and exams. You will also need an account on the Geography Network to work in the Geography Department computer labs, but those will be assigned in class, if you don't already have one.

This course is online at <http://blackboard.sdsu.edu> and all assignments and other course materials will be available through the course website. You can access Blackboard using the email address that you gave SDSU at registration, along with your Red ID.

Your grade in this course will be based on the following elements (total 500 pts):

¹ Thanks go to Dr. John Weeks, who shared his teaching materials of this course in 2006. The instructor has used these materials with varying level of modification.

² The older version is 2nd Edition (Boston: McGraw-Hill), 2000. You are recommended to use the 3rd Edition as many new examples and maps have been added.

- A set of 5 homework assignments (30 points each for #1 and #3, 50 points for #2, 20 points each for #4~#5, total 150 pts). Homework assignments will be made available on the internet via **Blackboard** on the dates shown in the course calendar. They must be turned in (in person, not over the internet) on or before the due date. No late assignments will be accepted. We will discuss the homework in class on the day that it is handed back.
- Three midterm exams (50 pts each, 150 pts in total) will be given on the dates listed in the Course Calendar. The problems on the midterms will be similar to the homework. All exams will be **open-book & open notes**. Please note that there will be no makeup exams. If you absolutely have to miss an exam for a legitimate reason, the weight of that exam will be added to the next exam.

The only valid excuses for missing the exam or failing to turn in an assignment on time are illness requiring medical care (with doctor's notes), university responsibilities, or personal emergency of a serious nature. Documentation is required, or permission from the instructor. Excuses such as a time conflict, oversleeping, and forgetting are not accepted.

- The final exam (120 pts) will be comprehensive. It will be similar to the midterms, except that it will be lengthier.
- Class participation (80 pts) is important. I assume that you will attend every class and that you will be prepared to ask and answer questions related to the course material.

Based on your total scores, your final grade will be given according to the standard below:

92-100% = A 88-91.99% = A- 84-87.99% = B+ 81-83.99% = B 78-80.99% = B-
 74-77.99% = C+ 71-73.99% = C 68-70.99% = C- 65-67.99% = D+ 63-64.99% = D
 60-62.99% = D- below 60% = F

Other Important Issues

Attendance and conduct: Attendance is critical to classes. Missing lectures, coming late, or leaving early can be costly to one's performance on the exams and assignments. Reading materials (e.g., newspapers) or other distracting behavior during class will not be permitted. Lateness to class disrupts the activities and is not appreciated.

Academic misconduct: You are responsible to know the elements of, and penalties for, academic misconduct, including dishonesty, plagiarism, cheating, etc. For more information, please go to <http://www.sa.sdsu.edu/srr/index.html>. The penalty in this class is an "F" for the exam or assignment where the violation occurs.

Course Calendar

See the separate sheet of course calendar

GEOG 385 (Fall 2014) Course Calendar

Week	Date	Topic	Reading	Assignment
1	25-Aug	1_Intro to class/non-spatial descriptive statistics		
	27-Aug	2_Overview of non-spatial descriptive statistics & visualization (graphing) of data	Ch 2, Sec 3.1-3.2	
2	1-Sep	Labor Day (no class)		
	3-Sep	3a_Descriptive spatial statistics (I)	Ch 4 Notes-1*	
3	8-Sep	3b_Descriptive spatial statistics (II)		
	10-Sep	3a, 3b continued		
4	15-Sep	4a_Probability distributions (Basics)	Sec 5.1-5.2	
	17-Sep	4a continued	Sec 5.1-5.2	H 1** due (1-2)
5	22-Sep	4b_Probability distributions (Normal Dist)	Ch 6	
	24-Sep	4c_Quadrat analysis	Sec 14.2	
6	29-Sep	4b and 4c continued		
	1-Oct	5_Hypothesis testing—one sample case	Ch 9, Notes-2	H 2 due (3-4)
7	6-Oct	Review for Exam 1		
	8-Oct	Exam 1 - bring your book, calculator, and pencils		
8	13-Oct	5 continued	Same	
	15-Oct	5 continued	Same	
9	20-Oct	6_Hypothesis testing—2 sample case	Ch10, Notes-2	
	22-Oct	6 continued	Ch 10, Notes-2	
10	27-Oct	6 continued	Ch 10, Notes-2	
	29-Oct	7_Point pattern analysis	Ch 14, Notes-3	H 3 due (5-6)
11	3-Nov	Review for Exam 2		
	5-Nov	Exam 2- bring your book, calculator, and pencils		
12	10-Nov	7 continued		
	12-Nov	8a_Quantifying spatial autocorrelation (Weight matrices)	Notes-4	
13	17-Nov	8a continued	Notes-4	H 4 due (7)
	19-Nov	Review for Exam 3		
14	24-Nov	Exam 3- bring your book, calculator, and pencils		
	26-Nov	Thanksgiving (no class)		
15	1-Dec	8b_Quantifying spatial autocorrelation (Moran's I etc.)	Notes-5	
	3-Dec	8b continued	Notes-5	
16	8-Dec	9_Applications of spatial statistics	Weeks et al. (2000)	H 5 due (8-9)
	10-Dec	Review for final		
	Wed. Dec. 17	Final Exam- bring your book, calculator, and pencils	15:30-17:30	

* All the notes (in pdf format) will be posted on line (from other sources).

** H 1 means home assignment 1; the numbers in parentheses are the topics to be covered