



SAN DIEGO STATE UNIVERSITY

Geography 104	Instructor: Dr. Li An
Geographic Information Science	Office hours: M/W 12:45-1:45 pm or by appointment
Spring 2015	Office: Storm Hall 308B
Class meet at AL 204	Phone: 619-594-5932
Time: M/W 2:00 pm - 3:15 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	

Acknowledgement: The instructor has adopted teaching materials from Drs. Ming-Hsiang Tsou, who first developed and taught the course *Geographic Information Science*, and Douglas A. Stow, who modified and taught the same course. Their contribution is highly appreciated.

I. Overview

This course will introduce fundamental concepts of geographic information science (GIScience), including geographic information systems (GIS), global positioning systems (GPS), cartography, remote sensing, and spatial analysis. Geospatial application tools such as Google Earth and Google Map will be used to demonstrate these concepts. Basic principles of quantitative reasoning will be covered. Students will learn how to use geospatial technologies and tools in addressing human and environmental problems. Students will learn how to organize geospatial data, visualize spatial patterns, and conduct basic spatial query and map overlay functions.

The prerequisites of this class include satisfactory completion of the Entry-Level Mathematics requirement (ELM).

II. Textbook

Bolstad, Paul, 2008. *GIS Fundamentals: A First Text on Geographic Information Systems* (Third Edition), Eider Press, White Bear Lake, Minnesota.

III. Lectures

Lecture sessions emphasize the principles, concepts, and applications of GIScience and spatial reasoning, including spatial analysis theory, GIS operations, cartography,

spatial statistics, remote sensing, and computer technology. Lecture slides will be posted on Blackboard.

IV. Online Assignments

Students will complete two home exercises on any campus computers or on their home computers with high speed Internet access. Students may wish to use computers in the Geography Spatial Analysis Laboratory during times the lab is not being used for other classes. See the course calendar for due dates of the two exercises. Late submission will be docked 10% per day. The exercises will be posted on Blackboard.

V. Grading:

There are 80 points for 16 in-class exercises (5 pts each), 20 points for 2 online exercises (10 pts each), 140 points for 2 midterm exams (70 pts each), and 100 points for the final exam. The total percentage of your scores is calculated based on the following proportions (you can use the online score calculation spreadsheet for easier calculation):

In-class exercises: 20%

Two midterm exams: 40%

Online exercises: 15%

Final exam: 25%

Your final grade is assigned based on your achieved percentage using the following grading policy:

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 (See score calculation spreadsheet)

Examinations will include multiple choice, problem solving (computation), and short answer questions. The final exam will include a comprehensive essay question (the writing component for the course). Web-based exercises will entail several modules containing on-line demonstrations and exercises. Each module consists of multiple choice short answer, and problem solving questions. Class participation will be based on attendance and your work on in-class exercises.

VI. Additional readings:

Butler, Declan (2006). The web-wide world. *Nature*, 439(16): 776-778 (Check Blackboard).

Gewin, Virginia (2004). Mapping opportunities. *Nature*, 427(22): 376-377 (Check Blackboard).

Mitchell, Andy (2005). The ESRI Guide to GIS Analysis, Chapter 2. ESRI Press: Redlands, CA

VII. 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 irrelevant materials (e.g., newspapers) or other distracting behavior during class will not be permitted. Lateness to class disrupts the activities and is not appreciated by either the instructor or your fellow students. The valid excuses for missing the exam or failing to turn in an assignment on time are illness requiring medical care, 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. In case that a makeup exam is justified and needed, contact the instructor as soon as possible.

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.

Other notes: Students with disabilities should talk to me for any possible facilities or assistance. Go to <http://www.sa.sdsu.edu/sds/> for more information. By the end of the second week of classes, students should notify the instructor of planned absences in this class for religious observances, if any.

VIII. Course Calendar

See the separate sheet for course calendar.

Geography 104 Calendar for SP 2015

Instructor: Dr. Li An

Week	Date	Topic	Reading	Online exercise
1	19-Jan	No class (MLK, Jr. Day)		
	21-Jan	L0-Course Overview; L1-GIS related concepts		
2	26-Jan	L1 continued	Ch 1, Butler 2006	
	28-Jan	L2-Geographic data models	Ch 2	
3	2-Feb	L2 continued	Ch 2	
	4-Feb	L3-Projections	Ch 3	
4	9-Feb	L4-Georeferencing	Ch 3	
	11-Feb	L3&4 continued	Ch 3	
5	16-Feb	L5-GIS data handling	Ch 4: 123-158	Exercie 1 due
	18-Feb	L5 continued		
6	23-Feb	Review for exam		
	25-Feb	Midterm exam 1		
7	2-Mar	L6-GPS	Ch 5	
	4-Mar	L7-Attribute and data tables	Ch 8	
8	9-Mar	L8-Cartography and geovisualization	Ch 4: 159-169	
	11-Mar	L9-Remote Sensing - part 1	Ch 6	
9	16-Mar	L10-Remote Sensing - part 2	Ch 6	
	18-Mar	L9&10 continued		
10	23-Mar	L11-Spatial analysis	Ch 9	
	25-Mar	L11-Spatial analysis (continued)	Ch 9	
11	30-Mar	No class (Spring recess)		
	1-Apr	No class (Spring recess)		
12	6-Apr	L12-Raster analysis	Ch 10-11	
	8-Apr	L12 continued		
13	13-Apr	Review for exam	Ch 10	
	15-Apr	Midterm exam 2		
14	20-Apr	L13-Spatial statistics	Michell 2005	
	22-Apr	No class (AAG Conference)		
15	27-Apr	L14-Spatial Esitmatation & Modeling	Ch 12-13	Exercise 2 due
	29-Apr	L14 continued		
16	4-May	L15-Spatial data quality & The future of GIScience	Ch 14, 15, Gewin 2004	
	6-May	Review	No reading	
	11-May	Final Exam Thursday 1:00 - 3:00 pm	Same classroom (AL 204)	

Additional Required Readings

- Butler, Declan (2006). The web-wide world. Nature, 439(16): 776-778. Paper will be provided on Blackboard
- Gewin, Virginia (2004). Mapping opportunities. Nature, 427(22): 376-377. Paper will be provided on Blackboard
- Mitchell, Andy (2005). The ESRI Guide to GIS Analysis, Chapter 2. ESRI Press: Redlands, CA