

Introduction to GIS & Maps + Software Applications

Instructor

Brent Hecht
Ph.D Student in Geography @ UCSB
email: bhecht@pipeline.sbcc.edu

Course Information

Meeting Times: Mondays, Wednesdays; 5:30 - 8:00pm
Course Webpage: www.brenthecht.com/teaching/geog171/
Course Location: EBS 123 & H 244
Grader: Julie Powell
Lab Assistant: Natalie Wong
Office Hours: I'm available immediately following the class, as well as by appointment via instant message. Please feel free to contact me if you need to meet at a time other than after class.

Course Description

A GIS (geographical information system) is a computer-based tool used to capture, store, manipulate, retrieve, analyze, and display geographic information. GIS is an exciting, powerful technology, with applications in many fields, including, for example, environmental monitoring, vehicle navigation, public safety, forest and land resource management, epidemiology, real estate sales and development, insurance risk analysis, market research, and commercial site planning, among others. Using GIS, a researcher can answer spatial questions like: Where would be the best location for a new school? Which environmental habitats are most important for the recovery of the endangered Tiger Salamander? What is the best delivery route?

These two classes (lecture and lab, which must be taken concurrently) will provide an introduction to GIS both in theory and practice. We will meet each M and W at 5:30 p.m. in the lecture room (EBS rm. 123) for ~ 1 hour to discuss theoretical concepts and spatial thinking, after which we will move to the laboratory (H rm. 244) for some hands-on experience with GIS software, practicing methods and techniques that complement these theoretical concepts.

While GIS is computer-based, you do not have to be a computer hardware or programming expert *by any means*. You should, however, feel comfortable using a PC, opening and saving and retrieving and moving files, exploring and moving directories,

and performing basic word processing functions.

Required Materials

- Price, Maribeth, Mastering ArcGIS, Third Edition. 2008. McGraw-Hill. (Required by beginning of second week)
- USB Flash Drive (recommended = 2GB; should be less than \$20)
- Headphones (if you want to use the CD-ROM tutorials)

Grading Formula

- Labs = 25 percent
- Midterm = 20 percent
- Final = 25 percent
- Project and Presentation = 25 percent
- Attendance = 5 percent

Grades will not be assigned on a strict percentage basis. At the end of the semester, I will assess grades based on overall class performance. However, I guarantee that students with at least the following percentage scores will receive at least the following grades:

- 93 percent - A
- 90 percent - A minus
- 87 percent - B plus
- 83 percent - B
- 80 percent - B minus
- 77 percent - C plus
- 73 percent - C
- 70 percent - C minus
- 67 percent - D plus
- 63 percent - D
- 60 percent - D minus

Note: Since concurrent enrollment is required, you will receive the same grade (as defined above) in 171 as 172.

Labs

We will be using a mix of lab exercises from the book and my own lab exercises. At times, I may add some custom content or remove some book content from your lab. This will be announced in class prior to the lab. Nearly all labs will be due one week from their assignment date. The usual pattern will be to have a new lab assigned on Monday and Wednesday's lab will be dedicated to working on the lab assigned on

Monday. However, there are some significant deviations from this plan. Please note these on the syllabus schedule.

Remember, you are responsible for bringing your USB flash drive and your headphones (if you want them) to lab each day.

IMPORTANT: Labs must be turned in electronically. Please send them as Zip or Microsoft Word files (or RTF or PDF) to my SBCC e-mail: bhecht@pipeline.sbcc.edu. There is a required format for the subject line of the e-mail. It must read as follows:

Subject: GIS LAB #*labNumber*. *yourFirstName yourLastName*

For example: GIS LAB #0: Brent Hecht

Final and Midterm

Both the final and midterm will be 1 to 1.5 hours long and will take place during lecture time (and a little overlap into lab). The final will be *cumulative*. Both tests will have a mix of multiple choice, fill-in-the-blank, short answer, and other types of questions. More information will be announced in lecture

Final Project and Presentation

In a group of 2 to 3, you will be responsible for writing a 10-page project report and making a 10 minute presentation. This will be a very free-form project, but more details will be announced after the midterm (see schedule). You will receive some class time to work on the project (see schedule), but the majority of project work will have to take place on your own time. This means you may have to find a weekly or twice-weekly time that your group can meet in the lab.

Attendance

Roll will be taken each day in class. If it is determined that you are missing a significant number of classes (more than 4 classes), you will be penalized starting from the fifth absence unless you have extenuating circumstances. You will receive the benefit of the doubt; I just require honest communication if events in your life prevent you from making it to more than four classes.

Reading

Assigned reading is to be completed *before* the class under which it is listed in the course schedule that follows. Expect to have to discuss the reading in class.

The Not-So-Fun Stuff

I consider the classroom and the lab to be places of education. Education should be fun and exciting (at least some of the time), but it requires a certain level of constant respect between teacher and student and between students. For this reason, I have attached the SBCC Standards of Student Conduct to this syllabus. Please refer to this for any questions about your rights and responsibilities as a student. Additionally, I take academic honesty *very* seriously. Cheating, copying, plagiarism, etc. will not be tolerated. *Your grade is for individual effort; copied files/maps from other students will be considered plagiarism.* Please see <http://online.sbccc.edu/index.php?page=support&sec=49> for SBCC's academic honesty policy, which will be strictly followed in this course.

A couple of other things

- No cell phones or text messaging in class (cell phones must be turned to silent or turned off)
- Student IDs are required for exams

Some Tips for Success in this Course

- *check your pipeline e-mail every day before class!*
- take great notes during lectures (and readings)
- maintain a well-organized binder of notes and other materials
- complete assignments on time
- study for exams
- ask me questions when you don't understand
- take advantage of in-person and/or instant-message office hours
- plan on spending a lot of time in the laboratory

If you are struggling, help yourself out by studying with classmates, visiting me, and by taking advantage of tutoring and other resources. For some good general tips, see <http://4sbccfaculty.org/lessons/success> .

Disabilities

SBCC Students with disabilities who are requesting accommodations should use the following SBCC procedure: contact the DSPS office (<http://www.sbccc.edu/dsps/>, SS 160, 805-965-0581x2364), submit documentation of your disability to the DSPS office, communicate with a DSPS specialist regarding options for services and accommodations, and reach written accommodation agreement with the DSPS specialist and with your instructors. SBCC requests you complete this process at least ten working days before your accommodation is needed, in order to allow DSPS staff and your instructors time to provide your accommodation.

Schedule

Important Note: Since I was a creative in designing this course, this schedule may change slightly as we move through the semester. Each change will be announced in

class and news of the change and the new syllabus will be posted on the course web page.

Week	Class Days	Lecture Subject	Lab	Reading	Notes
1	1/28	GIS is awesome!			
	1/30	It's Awesome, but What is GIS?		"Mapping Opportunities"	Have USB Flash Drive
2	2/4	Introducing ArcGIS	Lab 1: The Power of ArcGIS (Lab #0)		Have Textbook
	2/6	LAB DAY			
3	2/11	Other GIS Software; GIS Software Theory	Chapter 1 Exercises	Chapter 2	Lab #0 Due
	2/13	Data Models and Data Structures			
4	2/18	NO CLASS			
	2/20	Coordinate Systems and Projections	Chapter 3 Exercises	Chapter 3	Ch. #1 Due
5	2/25	LAB DAY			Ch. #3 Due
	2/27	Data Classification and Thematic Maps I	Chapter 4 Exercises	Chapter 4	
6	3/3	Data Classification and Thematic Maps II			
	3/5	GPS Lecture			
7	3/10	Data Tables and Querying	Chapter 5 Exercises	Chapter 5	Ch. #4 Due
	3/12	Data Tables and Querying II	Continue working on Lab #5		

Week	Class Days	Lecture Subject	Lab	Reading	Notes
8	3/17	Census Data	Census Data Lab (Lab #5.5)	None!	Lab 5 Due
	3/19	Census Data II / Lab Work Time			
9	3/24	Midterm, Final Project Overview			Census Data Lab Due
	3/26	MIDTERM	Final Project Discussions and Research		
10	3/31	SPRING BREAK!			
	4/2	SPRING BREAK!			
11	4/7	Spatial Joins	Chapter 7 Exercises	Chapter 7	
	4/9	Final Project Work Time			Final Project Proposal Due
12	4/14	Map Overlay	Chapter 8 Exercises	Chapter 8	Ch. #7 Due
	4/16	Final Project Work Time			
13	4/21	Geocoding	Chapter 10 Exercises	Chapter 10	Ch. #7 Due
	4/23	Geocoding II			
15	4/28	Raster Analysis	Chapter 15 Exercises		Ch. #10 Due
	4/30				
16	5/5	GIS Sample Lecture #2	Final Project Work Time		Ch. #15 Due

Week	Class Days	Lecture Subject	Lab	Reading	Notes
	5/7	Final Project Work Time			
17	5/12	Final Review Session			
	5/14	FINAL	Final Project Work Time		
18		Final Project Presentations			

Special thanks to Mike Vergeer for his help preparing this syllabus.