

**GEOGRAPHY 408B/L:
Environmental Applications in GIS
SH 107: T,TR 11:00-1:20 pm**

Instructor: Dr. Shawna Dark

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Office Location: 130J Sierra Hall **Office Hours:** Wednesday 10-11 or by appointment (please feel free to email me to discuss any course issues as well).

Course Website and Server Location: The course website is http://www.csun.edu/~sd1229/408B/408B_home.html . However, most of our materials will be stored on the server at Y:\Dark\408B

Textbook: *GIS for Environmental Management* by Robert Scally, ESRI Press, 2006. Other course reading materials will be made available to you throughout the duration of the course and posted on the server in a secure location for students in the course only. These materials will all be drawn from peer-reviewed academic journals, you will have a minimum of one each week.

Introduction: Geographic Information Systems (*GIS*) have fundamentally changed the methodology that geographers use to understand the world. The mapping, assessment, and analysis of natural systems in particular have become common place in a variety of settings including academia, government agencies, and private organizations. The purpose of this course is to provide students with a general conceptual background of environmental applications of GIS. A number of GIS applications in areas such as hydrology, conservation, biodiversity, and natural resource management will be explored via course readings and lab assignments. By the end of this course you will be familiar with the wide range of data sources, formats, and types of analysis that are utilized in environmental applications of GIS.

Course Objectives (see attached Learning Outcomes and Assessment):

1. To provide a conceptual understanding of the use of GIS in a wide range of environmental issues;
2. To become familiar with the use of selected methods of environmental analysis combined with GIS;
3. To obtain in-depth knowledge of a particular environmental application through an independent project;
4. To practice the use of advanced GIS analysis techniques.

Evaluation:

The achievement of these objectives will be measured through lab assignments, class participation, exams, and a final project. The grade breakdown is as follows:

Final Project & Presentation:	20%
Lab Assignments:	40%
Quizzes	40%

Grading System: The following scale will be used for the exams as well as for your final grade:

A	90 - 100%	B	80 - 89%	C	68 - 79%
D	55 - 67%	F	54% and below		

Academic Conduct: Please note, under no circumstances should you consider any form of cheating or plagiarizing in this course. **I ABSOLUTELY WILL NOT TOLERATE IT**, don't be fooled by congenial approach. If you are caught you will be given a failing grade for the course and you will be reported to the Associate Vice President for Student Affairs for disciplinary measures. Please refer to the following website if you are uncertain about the grounds for student discipline:

<http://www.csun.edu/anr/soc/studentconduct.html#standards>.

Lab Assignments: You will be given several lab assignments throughout the course of the semester. The purpose of lab assignments to teach you about the various environmental applications of GIS. The applications-based tutorials will be topic-specific and chosen to guide the student through an example application. These applications will be taken from an area of environmental geography such as conservation, vegetation mapping, biodiversity, land use, hydrology, climatology, etc. No extra credit will be given for this course.

Late Assignments: Late assignments will be docked 2 pts for each day late and will be returned to you at my convenience.

Class Project: Each of you will be responsible for completing a project for this course. The project can be on any environmental application of GIS. You must complete some type of advanced analysis (vegetation mapping, predictive modeling, GAP analysis, etc.). I will give you a handout the third week of the semester reviewing the details of this project.

Project Presentation: Each of you will present your project during the last three course sessions. Your presentation must be in PowerPoint format. The presentation will be 10-12 minutes long with 2 minutes for questions (standard professional conference format).

Quizzes: You will be given four quizzes during this course. Each quiz will consist of multiple choice and short answer questions based on your reading assignments and lecture material.

Other: DO NOT TURN IN ASSIGNMENTS VIA EMAIL. All assignments must be printed out and turned in to me directly unless I tell you likewise. This is really to protect you from the potential of the assignment getting lost.

File Organization: We will have a folder on the Y:\Dark408B\. In this folder you will find copies of all lab assignments, lecture notes, and materials for the lab assignments.

ADA Compliancy: If you need ADA compliant course materials please let me know so I can accommodate you!

Tentative Schedule

Why “tentative”? Because it might change.

Please stay up on what is happening in class, this is your responsibility.

Week	Date	Topic	Reading
1	26-Aug	Course Introduction/Writing a Scientific Paper	Assigned
		<i>Lab #1: Summarizing Scientific Articles & Module 6</i>	
2	2-Sep	Analysis with GIS	-
		<i>Lab #2: Module 7- Learning ArcGIS\Lab #1 Due</i>	-
3	9-Sep	Quiz #1: Working with GAP Data	Sally Chpt 1
		<i>Lab #3: Performing your own GAP Analysis\Lab #2 Due</i>	
4	16-Sep	GAP Analysis Continued	
		<i>Finish Lab #3: Due at end of class session</i>	
5	23-Sep	Performing Hydrological Modeling	Sally Chpt 3
		<i>Lab #4: Creating your own hydrological model</i>	
6	30-Sep	More on Hydrological Modeling	Sally Chpt 4
		Quiz #2 <i>Continue to work on Lab #4</i>	
7	7-Oct	Wetlands Mapping	
		<i>Lab #5: Wetlands Mapping\Lab #4 Due</i>	
8	14-Oct	Historical Geography	Sally Chpt 5
		<i>Finish Lab #5: Due at end of class session</i>	
9	21-Oct	More on Historical Geography	Sally Chpt 6
		Quiz #3 <i>Lab #6: Historical Mapping</i>	
10	28-Oct	Historical Wetlands of the San Gabriel River	Sally Chpt 7
		<i>Finish Lab #6: Due at end of class session</i>	
11	4-Nov	Habitat Suitability Modeling	Sally Chpt 9
		<i>Lab #7: Creating your Own Habitat Suitability Model</i>	
12	11-Nov	More on Habitat Suitability Modeling	Sally Chpt 10
		<i>Lab #8: Spatial Analysis of Geohazards</i>	
13	18-Nov	Analysis of Geohazards	Sally Chpt 11
		Quiz #4 <i>Finish Lab #8: Due at end of class session</i>	
14	25-Nov	Thanksgiving Break on 12/27 - no class	
15	2-Dec	Final Projects	
16	9-Dec	Final Projects\Project Presentations	
17	16-Dec	Project Presentations\Final Projects Due	

Learning Outcomes and Assessment

Goal A: Building a Knowledge Base

Students in this course will identify and define key terms and concepts central to understanding the operation of geographic information systems and various environmental issues such as global warming, pollution, habitat loss, etc.

- Assessment/Evaluation tool: Lab assignments, Exam Questions, Class project

Students will be able to define and explain key terms such as: spatial analysis, 3D analyst, spatial autocorrelation, species distribution, biodiversity, conservation, etc.

- Assessment/Evaluation tool: Lab assignments, Exam Questions

Students will be able to identify on a map important local and worldwide environmental characteristics and associated environmental issues at these sites.

- Assessment/Evaluation tool: Lab Assignments, Exam Questions

Students will be able to recognize, list and describe key ideas, facts and spatial conditions in the following categories: spatial diffusion, spatial autocorrelation, intersection, landscape mosaic, patch dynamics, land use policy, etc.

- Assessment/Evaluation tool: Lab assignments, Exam Questions, Class Project

Goal B: Acquiring Knowledge

Students will develop skills for acquiring new knowledge.

- Assessment/Evaluation tool: Lab assignments, Exam Questions, Class Project

Students will recall information presented to them textually, cartographically and through numeric or graphic communication.

- Assessment/Evaluation tool: Lab assignments, Class Project

Students will demonstrate their ability to interpret non-textual information visible on the physical & biotic landscape.

- Assessment/Evaluation tool: Lab assignments, Class Project

Goal C: Problem Solving Skills

Students will demonstrate their problem solving skills.

- Assessment/Evaluation tool: Lab assignments, Class Project

Students will analyze non-textual messages in the landscape and from maps, graphics, etc.

- Assessment/Evaluation tool: Lab assignments, Exam Questions, Class Project

Students will apply universalizing processes, such as orographic precipitation or plate tectonics, to local conditions.

- Assessment/Evaluation tool: Lab assignments, Exam Questions

Students will compare the similarities and differences between and among various physical locations and the physical & biological processes that produce them.

- Assessment/Evaluation tool: Lab assignments, Exam Questions

Students will explain selected interactions between physical & biological processes such as human impact on the environment, habitat degradation, pollution, etc.

- Assessment/Evaluation tool: Lab assignments, Exam Questions.

Goal D: Communicating Knowledge

Students in this course will be able to communicate ideas by using words, numbers, maps and other graphic devices.

- Assessment/Evaluation tool: Lab assignments, Class Project

Students will construct one or more legible maps.

- Assessment/Evaluation tool: Lab assignments, Class Project

Students will effectively communicate facts, ideas and statistics using maps and graphic devices.

- Assessment/Evaluation tool: Project Presentation

Students will effectively communicate their research topic, research method, data analysis and conclusion through an oral presentation.

- Assessment/Evaluation tool: Project Presentation