

GEOGRAPHY 487

Advanced Geographic Information Systems

Course Webpage - <http://www.sonoma.edu/users/c/clamatth/geog487>

SPRING SEMESTER 2007

Lecture/Lab: MW 8:00 am – 9:50 am, Stevenson 3059 (GIS Teaching Lab)
Th 9:00 am – 9:50 am

Instructor	Contact Information
Matthew L. Clark, PhD Assistant Professor & Director of Geographic Information Center Dept. of Geography and Global Studies Sonoma State University	Email: matthew.clark@sonoma.edu Office: Stevenson 3060 Office Hours: M 2 - 3 pm; Tu 11 am -12:00 pm Phone: 707-664-2558

Course Overview:

This course will extend and strengthen Geographic Information System (GIS) skills and concepts acquired through the Introduction to GIS course (Geog 387). Topics to be covered include raster data analysis, hydrologic modeling, vineyard mapping, geocoding and network analysis, and spatial decision support systems. The first part of the course is an integrated lecture and laboratory component, which relies on the ArcGIS software package. Each student will also conduct an individual project that investigates a GIS-based spatial analysis relating to a topic of his or her choice.

Prerequisites:

Geography 387 or equivalent introductory GIS course using ArcGIS, basic college-level math, statistics helpful.

Required Text:

Bolstad, P. (2005). *GIS Fundamentals, Second Edition*, Eider Press, White Bear Lake, MN
Book available from Atlas Books for \$42 + Shipping, <http://www.atlasbooks.com>, 800-247-6553

Software:

Although there are several commercial and open-source GIS software packages available, the laboratory section of this course will use ArcGIS 9 by ESRI (www.esri.com). ArcGIS is considered by the user community to be the industry standard. The course is designed to teach skills that will transfer to other GIS software packages.

Laboratory Assignments

There will be 6 laboratory assignments available through the course webpage. Each lab is worth 6% of your grade. We will work on these labs as part of lecture and lab time, but it is the student's responsibility to complete each lab **before the next lab** is assigned. Late lab assignments will be **reduced by 10%** of their total points for each day they are late.

Field Trip, Feb. 23 (March 1 backup day in case of rain) - REQUIRED

The vineyard mapping lab has a field component on a Saturday, from 8 am until 2 pm. The field day is tentatively scheduled for Feb 23, but may be moved to March 1 in case of rain. Bring a lunch, water, layered clothing, a hat, shoes for muddy conditions, and a calculator.

Journal Article Reviews, Due February 27, March 19 and April 4

You will review and present a journal article to the class using Powerpoint or other format of your choice. You may choose the article to present, although it must describe an application that uses geospatial technology (e.g., GIS, GPS, remote sensing) and it must come from a peer-reviewed journal. The best use of your time would be to select an article that is relevant to your individual project, in terms of methodology, technique or similarity of subject matter.

Individual Project Report, Due May 19

You are required to write a 15-20 page individual project report worth 40% of your grade. Your paper project will explore a topic of your choice and must include a question that requires spatial analysis with GIS. You are encouraged to choose a topic that you find interesting so that you are intellectually invested in the findings and final report. More information about the individual project, report format, and due dates for various milestones will be given in class and on the web page.

Grading Policy:

	% of Grade
Labs (6, 6% each)	36
Journal Article Review	5
Final	15
Individual Project Report	40
Participation	4
Total for course	100

Grades will be assigned as follows:

A = 100-90.0%, B = 89.9-80.0% C = 79.9-70.0%

D = 69.9-60.0%, F < 60.0%

Other miscellaneous items:

- Plagiarism will not be tolerated and could result in a failing grade.
- No extra credit is available for this class.
- If you are a student with a disability and think you may need accommodations in this course, you should notify the instructor as soon as possible, preferably before the last date to drop the class. You should also contact the Disabled Students Services located in 1049 Salazar Hall, (707) 664-2677.

Lecture Schedule:

Date	Lecture	Readings
Jan 28	Course Introduction; Review of GIS fundamentals	
Jan 30	Raster analysis	Chapter 10
Feb 4	Raster analysis	
Feb 6	Raster analysis	
Feb 11	Geocoding and network analysis	Chapter 9
Feb 13	Geocoding and network analysis	p. 335-341
<i>Feb 18</i>	<i>Holiday - President's Day</i>	
Feb 20	Vineyard Mapping - preparation	
Feb 23	Vineyard mapping field trip	
Feb 25	Vineyard Mapping – lab wok	
Feb 27	Journal Article Review #1; Project milestone #1 due	
Mar 3	Site suitability analysis (Cartographic modeling)	Chapter 13
Mar 5	Site suitability analysis (Cartographic modeling)	p. 433-451
Mar 10	Terrain analysis	Chapter 11
Mar 12	Terrain analysis	
Mar 17	Individual project workshop	
Mar 19	Journal Article Review #2	
Mar 24	<i>Holiday - Spring Break</i>	
Mar 26	<i>Holiday - Spring Break</i>	
Mar 31	<i>Holiday - Cesar Chavez</i>	
Apr 2	Journal Article Review #3	
Apr 7	Interpolation and prediction; Project milestone #2 due	Chapter 12
Apr 9	Interpolation and prediction	p. 395-418
Apr 14	Individual project workshop	
Apr 16	Individual project workshop	
Apr 21	Individual project workshop	
Apr 23	Individual project workshop	
Apr 28	Individual project workshop; Project milestone #3	
Apr 30	Individual project workshop; Project milestone #3	
May 5	Individual project workshop	
May 7	Individual project presentations	
May 12	Individual project presentations	
May 14	Individual project presentations	
May 19	Final Exam: 8 am -9:50 am; Individual project report due	

Lab Schedule:

Lab	Due	Topic
Lab 1	Feb 12	Raster analysis
Lab 2	Feb 20	Geocoding
Lab 3	Mar 3	Vineyard Mapping
Lab 4	Mar 10	Site suitability analysis
Lab 5	Mar 17	Terrain analysis
Lab 6	Apr 14	Interpolation and prediction