

GEOGRAPHY 387

Introduction to Geographic Information Systems

<http://www.sonoma.edu/users/c/clamatth/geog387>

FALL SEMESTER 2009

Lecture: MW 8:30 am – 9:50 am, Stev 3036

Lab Section 2: MW 3:00 pm – 4:20 pm, Stev 3059

Lab Section 4: MW 10:40 am – 11:50 am, Stev 3059

Lab Section 6: TuTh 5:20 pm – 6:40 pm, Stev 3059

Instructor

Dr. Matthew L. Clark
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Office Hours:
TW 10:00 am -11:00 am
or by appointment
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Teaching Assistants

Lab sections 2 & 4

Alex Young
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Lab section 6

Tom Robinson
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Course Overview

This course will introduce you to the fundamental concepts underlying Geographic Information Systems (GIS). Topics to be covered include geospatial data models, map projections, acquisition of geospatial data, spatial analysis, data management, case studies and new technological developments. The course has a laboratory component, which introduces students to the ArcGIS software package.

Prerequisites

Geography 205, knowledge of Microsoft Windows file management, basic college-level math, knowledge of basic statistics helpful

Required Text

Paul Bolstad (2008). *GIS Fundamentals: A First Text on Geographic Information Systems*, 3rd Edition, Eider Press, Minnesota, ISBN: 978-0-9717647-2-9
Available from Atlas books, www.atlasbooks.com (800) 247-6553, \$40+ shipping

Software:

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

Course Schedule:

Date	Lecture	Readings	Lab
		Ch.1	No lab
Aug 26	Definitions and history of GIS		
Aug 31	Intro to labs and ArcGIS	Ch. 3	Lab 1: Exploring ArcGIS
Sep 2	Review of geospatial coordinate systems		
Sep 7	<i>Labor Day holiday</i>	Ch. 2	Lab 2: Map projections <i>Lab 1 due Sep 9/10</i>
Sep 9	Geographic representation		
Sep 14	Data models: Vector	Ch. 2	Lab 2: (continued)
Sep 16	Data models: Vector (cont)		
Sep 21	Attributes and Databases; Query and summary of data	Ch. 8	Lab 3: Attribute tables and data query <i>Lab 2 due Sep 21/22</i>
Sep 23	Data models: Raster		
Sep 28	Data models: Raster (cont)		Lab 3: (continued)
Sep 30	Cartographic design & map types		Lab 4: Cartography and classification <i>Lab 3 due Sep 30/Oct 1</i>
Oct 5	Cartographic design & map types (cont)		Lab 4: (continued)
Oct 7	Midterm Exam #1		
Oct 12	Data input: Existing data	Ch.4 & 7	Lab 5: Data model transformations <i>Lab 4 due Oct 12/13</i>
Oct 14	Data input: Digitization & scanning		
Oct 19	Data input: Digitization & scanning (cont)	Ch. 5	Lab 6: Georeferencing and digitization <i>Lab 5 due Oct 19/20</i>
Oct 21	Data input: Global Navigation Satellite Systems (GNSS)		
Oct 26	Data input: Remote Sensing	Ch.6	Lab 6: (continued)
Oct 28	Metadata		Lab 7: Metadata <i>Lab 6 due Oct 26/27</i>
Nov 2	Vector spatial analysis	Ch. 9	Lab 7: (continued)
Nov 4	Vector spatial analysis (cont)		Lab 8: Vector analysis
Nov 9	Midterm Exam #2		<i>Lab 7 due Nov 9/Nov 10</i>
Nov 11	<i>Veterans Day holiday</i>		
Nov 16	Raster spatial analysis	Ch. 10	Lab 9: Raster analysis
Nov 18	Raster spatial analysis (cont)		<i>Lab 8 due Nov 16/17</i>
Nov 23	Data standards and data quality Furlough Day – No Lecture	Ch. 14	

Nov 25	<i>Thanksgiving holiday</i>		
Nov 30	Internet-based GIS	<i>Nature papers; Ch. 13</i>	<i>Lab 10: Google Earth Lab 9 due Nov 30/Dec 1</i>
Dec 2	GIS in action: guest lecturer TBA		
Dec 7	Spatial modeling	Ch. 15	<i>Lab 10 due Dec 7/8</i>
Dec 9	Final review, class wrap-up and class evaluations		
Dec (TBA)	Final Exam, (TBA)		

Grading Policy:

	% of Grade
Lab assignments (10)	50 (5% each)
Midterm #1	15
Midterm #2	15
Final	20
Total for course	100%

Grades will be assigned as follows:

A = 100-90%, B = 89-80% C = 79-70%

D = 69-60%, F < 60%

All laboratory assignments are due **1 week** after they are assigned by the starting of lab section, unless otherwise stated on the course schedule. Late lab assignments will be reduced by 10% of their total points for each day they are late. Make-up exams are possible under extenuating circumstances, but you must notify Dr. Clark of the problem immediately -- preferably BEFORE the exam. You will need a note from a doctor, or some other suitable verification of the excuse. If an exam has already been graded and handed back, it will no longer be possible to make it up.

Plagiarism will not be tolerated and could result in a failing grade. Each student is expected to turn in his/her own written responses to the lab assignments. **Do not copy text verbatim from the Internet, labs, help manuals or other materials, as this is a form of plagiarism.**

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.