

GEOGRAPHY 387

Introduction to Geographic Information Systems

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

FALL SEMESTER 2011

Lecture: MoWe, 10:45 am – 12:00 pm, Stev 3072 (Matthew Clark)

Lab Section 2: Tu 1:00 – 3:40 pm, Stev 3059 (Matthew Clark)

Lab Section 4: We 7:00 – 9:40 pm, Stev 3059 (Elizabeth Lotz)

Lab Section 6: Tu 7:00 – 9:40 pm, Stev 3059 (George Riner)

Lab Section 8: Th 7:00 – 9:40 pm, Stev 3059 (George Riner)

Instructor

Dr. Matthew L. Clark
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Dept. of Geography and Global Studies

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Office Hours:
TuTh 10:00 am -12:00 pm
or by appointment
Phone: 707-664-2558

Teaching Assistants

Elizabeth Lotz
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Office Hours: by appointment

George Riner
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Stev 3032

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. **You will need to purchase flash (thumb) drive or equivalent USB device to save your work in lab (≥1 GB capacity).**

Grading Policy:

	% of Grade
Lab assignments (9)	50 (5.5% each)
Midterm #1	15
Midterm #2	15
Final	20.5
Total for course	100%

Grades will be assigned as follows:

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

D = 69-60%, F < 60%

It is strongly recommended that you attend lab as you will greatly benefit from having an instructor to guide you through the lab assignments. All laboratory assignments are due **1 week** after they are assigned section, unless otherwise stated on the course schedule. The due date is by midnight, but it is ideal if you finish each lab before the next lab is assigned so that you do not fall behind and benefit from your instructor's instructions. Late lab assignments will be reduced by 10% of their total points for each day they are late.

Since there is often just one 3 hour lab session to finish an assignment, you may want to answer some questions after lab. The lab will also be open during business hours, except when Lab 2 meets (Tu 1-3:40pm). Your instructor can provide you with a student evaluation version of ArcGIS Desktop (Windows only) that is good for one year from the time you install the software. In all cases, we emphasize that it is important to attend lab and use the after-hours lab time or your evaluation copy as a supplement to your learning.

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.

Course Schedule:

Date	Lecture	Readings	Lab
		Ch.1	No lab
Aug 24	Definitions of GIS; Intro to labs and ArcGIS		
Aug 29	Intro to ArcGIS (cont)	Ch. 3	Lab 1: Exploring ArcGIS
Aug 31	Review of geospatial coordinate systems		
Sep 5	<i>Labor Day (campus closed)</i>	Ch. 2	Lab 2: Map projections <i>Lab 1 due</i>
Sep 7	Geographic representation		
Sep 12	Data models: Vector		Lab 2 (continued)
Sep 14	Data models: Vector (cont)		
Sep 19	Attributes and Databases	Ch. 8	Lab 3: Attribute tables and data query <i>Lab 2 due</i>
Sep 21	Query and summary of data		
Sep 26	Cartographic design & map types		Lab 4: Cartography and classification <i>Lab 3 due</i>
Sep 28	Data models: Raster		
Oct 3	Data models: Raster (cont)		Lab 4 (continue)
Oct 5	Midterm Exam #1		
Oct 10	Data input: Existing data	Ch. 4, 7	Lab 5: Data model transformations <i>Lab 4 due</i>
Oct 12	Data input: Digitization & scanning		
Oct 17	Data input: Global Navigation Satellite Systems (GNSS)	Ch. 5, 6	Lab 5 (continue)
Oct 19	Data input: Remote Sensing		
Oct 24	Vector spatial analysis	Ch. 9	Lab 6: Georeferencing and digitization <i>Lab 5 due</i>
Oct 26	Vector spatial analysis (cont)		
Oct 31	Vector spatial analysis (cont)		Lab 6 (continue)
Nov 2	Guest Lecture: TBA		
Nov 7	Midterm Exam #2		Lab 7: Vector analysis <i>Lab 6 due</i>
Nov 9	Raster spatial analysis		
Nov 14	Raster spatial analysis (cont)	Ch. 10	Lab 8: Raster analysis <i>Lab 7 due</i>
Nov 16	Raster spatial analysis (cont)		
Nov 21	Metadata standards and data quality	Ch. 14	<i>Mon and Tues labs only</i>
Nov 23	<i>Thanksgiving holiday (campus closed)</i>		
Nov 28	Internet/Web GIS	<i>Nature papers;</i> Ch. 15	Lab 9: Internet-based GIS <i>Lab 8 due</i>
Nov 30	Internet/Web GIS (cont)		
Dec 5	Spatial modeling	Ch. 13	<i>Lab 9 due</i>
Dec 7	Spatial modeling (cont)		
Dec 12	Final Exam, 11:00 am - 12:50 pm (Stev 3036)		