$\preceq$ COMP 198   Spatial Reasoning and GIS $\succeq$

MWF   *Lecture/Lab Mars Science 3100 (GIS Lab) 11:30-12:20*

Who:	Michael Gousie
Where:	Science Center 1325
When:	Mon, Wed 1:30-2:30, Thu 1:00-2:30
	and by appointment
E-mail:	mgousie@wheatoncollege.edu
Web:	http://cs.wheatonma.edu/mgousie

Content:

Nearly everyone uses Google Maps or MapQuest to get directions. Many people use a GPS in their cars to find their favorite restaurant. Still others use Google Earth to investigate a favorite spot. But how do all these technologies work? They are all versions of a GIS. A Geographic Information System (GIS) is a professional software package that allows a user to combine data with geographical information, and then produce a meaningful visualization of the result. In this course, you will learn the basics of spatial data, first using Google Earth, and then with ArcGIS v10, a full-fledged, professional GIS. Armed with such software, you will produce geographic visualizations and answer questions in such diverse areas as politics, economics, and sociology.

ArcGIS is a huge, complex piece of software. Much of the course will involve in-class hands-on exercises. However, many of these exercises will be too long to complete in class. Furthermore, it is impossible to cover every nuance of ArcGIS during class time. Therefore, you will be required to do nontrivial work on your own outside of class, possibly requiring significant time.

Required Text:

Kennedy. *Introducing Geographic Information Systems with ArcGIS*, 2nd Edition, Wiley, 2009. It is helpful if your copy includes the CD-ROM.

There will also be several handouts.

Requirements:

There will be two exams during the semester and a final exam. The exams will comprise 42% of your grade. Six projects will be assigned, each worth 8%, to be completed using ArcGIS and/or other software, for a total of 48%. Projects can be completed in the GIS lab or on your own computer using a virtual GIS environment. Some of the projects may be completed by pairs of students. The remaining 10% will be the average of all written in-class work and/or homeworks.

Grading:

Grades will be assigned according to the following scale:

A = 93-100, A− = 90-92, B+ = 87-89, B = 83-86, B− = 80-82, etc.

Exam Schedule:

Exam	Weight	Date
Exam 1	12%	February 29
Exam 2	15%	April 4
Final	15%	May 8 @ 2:00 PM

Assignment Schedule:

Project	Topic (Subject to change)	Duration
GIS1	Google Earth	1 Week
GIS2	Basic ArcGIS	1 Week
GIS3	Blue and Red States	2 Weeks
GIS4	Census Data and the US	2 Weeks
GIS5	Making a 3D Object	2 Weeks
GIS6	Complex Data Analysis	TBD

Course Policies:

- You are responsible for all material covered in class, including the reading (shown below).

- You should bring your book to class, as we will do many of the hands-on exercises.

- If you must miss a quiz or exam for any reason, you must inform me BEFORE the test. Except in the case of emergency, illness, or you fell through the Mars green roof, makeup exams will not be given.

- Projects will be done using ESRI ArcGIS v10 software. This is available in the GIS Lab and will also be available on your own computer via remote login. You will need a flash drive to store your own data as well; bring this to class.

- Written portions of projects and homeworks should be neat and done on loose-leaf or plain paper. Do not tear paper out of a notebook. Staple multiple pages together.

- Assignment due dates are FIRM.

  - All computer projects must be submitted electronically by 11:59:59 PM on the due date unless otherwise noted. Projects submitted on the following day will receive a 15% penalty. Anything turned in later will receive a 0. Hard copy portions must be submitted the following day or as indicated in the project specifications.

  - Written assignments must be handed in at the start of class on the due date. There are **no** provisions for written work turned in late.

  - There will not be any individual "extra credit" work. If you did not have time to do a good job on the original assignment, how will you have time to do *additional* work?

- You are expected to adhere to the Honor Code.

  - Although *discussion* of projects or homework is encouraged, the final *solutions* for assignments should be the result of your own work. Any copying of programs, data, or homework is prohibited.

  - Collaboration on exams is prohibited.

  - You will be required to write and sign the pledge on all work turned in: *I have abided by the Wheaton Honor Code in this work.*

  - Any violation of the above guidelines will result in a 0 for the assignment/exam and/or a failing grade for the course.

- The use of laptops or other computers/pads is not allowed during lecture. Special arrangements can be made if necessary.

- The use of cell phones, iPods, iPads, iPhones, iCheats, and other personal electronic devices is prohibited during class and lab.

- Please, no eating during class and no food/drink near computers.

Course Schedule (subject to change):

Wk #	Week Begin	Topic	Reading
	January		
1	22	Visualization and Maps, GIS Basics	Chapter 1, notes
2	29	Projections and Coordinate Systems	Chapter 1, cont.
	February		
3	5	Google Earth	Handouts, notes
4	12	Raster Data	Chapter 2
5	19	Using ArcMAP; Data Exploration	Chapter 3
6	26	Exam 1, More ArcMAP	Chapter 3, cont.
	March		
7	4	Spatial Data	Chapter 4
8	11	*SPRING BREAK*	Chapter Bahamas
9	18	Collecting Data	Chapter 5
10	25	Intro to Spatial Analysis	Chapter 6
	April		
11	1	Exam 2, More Spatial Analysis	Chapter 6, cont.
12	8	Creating Spatial Data Sets	Chapter 7
13	15	Raster Data Analysis	Chapter 8
14	22	Terrain Mapping	Chapter 9
15	29	Spatial Interpolation, Review	Handout, notes
	May		
16	6	Final Exam May 8 @ 2:00 PM	