

Introduction to Geographic Information Systems (GIS)

This course provides you with the fundamentals of GIS and digital mapping. You will be introduced to basic computer skills and the structure of digital geographic databases necessary to create a GIS, using the ArcView 9.1 suite of software applications. The goal of this course is to understand GIS as a useful and flexible tool that you can use to address and solve a wide range of everyday “geographic” questions and problems.

This course is a prerequisite for GARP0344 (Advanced Geographic Information Systems, Spring 2007 semester). Open to all majors – No Prerequisites.

Time, Location, Numbers

- GARP 0244; CRN 10343
- Wednesdays, 16:30 to 19:00, Wilson 139 computer lab, 3 credit hours

Please note: We meet formally only once every week. Therefore, missing class (for any reason) leaves you with a considerable gap in your learning process. This also implies that you will have to spend significant additional time each week practicing with the software and working on the exercises, assignments, and projects.

Your Instructor

Dr. Carsten Braun (cbraun@wsc.ma.edu 413.572.5595)
Office: Bates 06 (basement, next to the lab room)
Office Hours: MWF, 12:15 to 13:15 (or anytime by appointment)

➔ If you feel that you are not progressing as well as you hoped, please feel free to talk to me during my office hours or a mutually convenient time – the sooner the better! Please do not wait until the end of the semester. I’m happy to do whatever it takes to help you succeed.

Required Resources for this course

GIS Tutorial: Workbook for ArcView 9 (Gorr and Kurland, ESRI Press 2005)

- This tutorial/textbook includes a series of exercises and assignments to provoke critical thinking and develop quantitative problem-solving skills using a GIS.
- ISBN 1-58948-127-5, 374 pages, ESRI Press 2005, \$69.95.
- Available at the WSC bookstore.

Please note: This GIS Tutorial Workbook includes two CD’s. One CD contains the necessary exercise data, the other CD contains a free 180-day fully-functional version of ArcView 9.1 – a great deal! The data and software are provided for you in the computer lab (Wilson 139). However, if you are planning to use the data and software on your own computer (highly suggested!) – then do **NOT** purchase a used copy of this book (the software may not work anymore).

A USB thumb-drive/memory stick

- A USB thumb-drive or memory stick is required for this class (in order to save your data, exercises, assignments, and projects).
- USB thumb-drives/memory sticks are available from the WSC bookstore, from local retailers (e.g. Staples, BestBuy, etc.) and from a variety of online vendors.
- Suggested size: 512 MB and greater; approximate cost: \$20 and up.
- A USB thumb-drive or memory stick is also useful for your other classes.

A notebook and 3-ring binder

- To create and continuously update your own personal GIS tutorial/help function. The software comes with a very comprehensive help function, but it is always more efficient to write down your own tricks and procedures.
- To organize hand-outs and printed maps.

Course Logistics

This is a “hands-on” class (our motto here: Practice! Practice! Practice!). Dynamic geographic databases (i.e. GIS) are fairly complex – “learning-by-doing” is therefore the most appropriate and efficient teaching/learning method. In addition, we will create and foster a cooperative learning environment in-class and beyond by supporting each other in order to understand concepts and to solve problems.

One of the best techniques to learn yourself is by teaching others! I encourage you to collaborate with other students in-class, on the assignments, and on the two projects. However, at the end, you are responsible to hand-in your own (original) work.

I expect a high level of effort and engagement from each student, especially when it comes to the in-class exercises, assignments/exercises, and projects. What you get out of this class is primarily a function of the amount of effort you put in. This is not a class where you can sit back and wait for “learning to happen”. In this course, you have to consistently, actively and, and even pro-actively engage with the tasks, questions, assignments/exercises, and projects in order to (a) learn to use the GIS software and (b) to understand what a GIS can do for you.

➔ If you feel that you are not progressing as well as you hoped, please feel free to talk to me.

You will be able to start each week’s assignment in class. There will be a short introduction lecture and a review of the previous week’s assignment (as needed). The GIS Tutorial contains 9 chapters. Each chapter takes you through a series of tasks and steps to familiarize yourself with the topic/theme of the chapter. Once you’re finished with that particular section, you can start with the two exercises (= one assignment). It should be possible to finish at least one of the two exercises in class. It remains your responsibility to complete the exercises/assignment before the assigned due date (usually the following Wednesday).

You will also work on two projects over the course of the semester. The MassGIS project involves downloading different types of data from the MassGIS WWW site and creating a series of maps, graphs, and reports. You will be amazed what kind of data are available for free! We will dedicate the class on December 6 to project presentation and discussion. The Final Project will take you through a series of tasks and steps in order to plan and conduct a “real” GIS project. You will receive the Final Project on December 13 (last class) and you can start immediately. The Final Project

is due the following Wednesday (December 20) at 12:00 noon. Note: there are no test, quizzes, or exams in this course.

There will be one to three visiting speakers, who are GIS professionals and actually use GIS as part of their daily work. Dates tbd.

Grading Policy

Your final grade is a function of your performance throughout the entire semester and combines the 11 assignments, the two projects, and an evaluation of your participation, effort, and engagement. You will not “flunk” this course based on any one poor grade. If you are concerned about your grades or performance in the course – please talk to me.

➔ Grading is a time-consuming process (especially for a class like this) – please allow at least one week for the results to be ready.

- 11 assignments (9 assignments from the GIS Tutorial, Week 1 homework, Week 2 in-class project). The lowest grade is dropped, 10 grades remain. The assignments together represent 50 percent of your final grade (i.e. each assignment represents 5 percent).
Late = Zero.
- Two projects (MassGIS Project and Final Project). These two projects together represent 40 percent of your final grade (i.e. 20 percent each). Late = Zero.
- Class participation, engagement, and effort: 10 percent of your final grade.

Letter	Points	Letter	Points	Letter	Points
A	93 to 100	B-	80 to 82	D+	67 to 69
A-	90 to 92	C+	77 to 79	D	63 to 66
B+	87 to 89	C	73 to 76	D-	60 to 62
B	83 to 86	C-	70 to 72	F	<60

The Fine Print

- Please be on time (i.e. get there before class starts).
- Don't leave before the end of class.
- Turn off your cell phones.
- Attendance is Mandatory.

Class Schedule

Week	Date	Topic/Theme	In-Class Task(s)	Assignment(s)
Week 1	Sept. 06	GIS: What Is It? Class Logistics	Online Research	Written Report of Online Research
Week 2	Sept. 13	GIS in a Nutshell! (In-class project)	GS Ch. 1/2	Complete Project Project Report
Week 3	Sept. 20	Handling ArcMap/ArcCatalog Features and their Attributes	GT Ch. 1	Ex. 1.1/1.2
Week 4	Sept. 27	GIS Map Design	GT Ch. 2	Ex. 2.1/2.2
Week 5	Oct. 04	GIS Outputs	GT Ch. 3 Explore MassGIS	Ex. 3.1/3.2 MassGIS homework
Week 6	Oct. 11	No Class (We = Mo schedule)		
Week 7	Oct. 18	Aggregate Data (Join/Relate) Start MassGIS Project	GT Ch. 4/hand-out	Ex. 4.2 MassGIS Project
Week 8	Oct. 25	Importing Data into a GIS	GT Ch. 5	Ex. 5.1/5.2 MassGIS Project
Week 9	Nov. 01	Digitizing/Raster Data	GT Ch. 6	Ex. 6.1/6.2 MassGIS Project
Week 10	Nov. 08	Where Is It? (Geocoding)	GT Ch. 7	Ex. 7.1/7.2 MassGIS Project
Week 11	Nov. 15	Spatial Data Processing	GT Ch. 8	Ex. 8.1/8.2 MassGIS Project
Week 12	Nov. 22	No Class (Thanksgiving Break)		
Week 13	Nov. 29	Spatial Analysis	GT Ch. 9	Ex. 9.1/9.2
Week 14	Dec. 06	MassGIS Project	Presentation/Discussion of the MassGIS Project	
Week 15	Dec. 13	Introduction of Final Project (due 12/20 2006 at 12:00)	Start with Final Project	Work on Final Project

- GT = GIS Tutorial Textbook.
- GS = Getting Started With ArcGIS (text and data are included with the software).

Notes on the Course Schedule

- Wednesday, October 11 follows a Monday schedule at Westfield State College.
- No class on 11/24 (Thanksgiving Recess)
- Wednesday, December 13 is the last day of classes.
- Snow Make-up Day: Friday, December 22 (we may need it – don't plan to start the holidays before that!)