COURSE SYLLABUS
SUMMER 2012

Professor Zvia Segal Naphtali
zvia.naphtali@nyu.edu
Home/office phone  212-877-1475
Office Hours: Before & after class or by appointment

Course Description

The course introduces students to the uses of spatial data in many areas of application including urban and transportation planning, housing and neighborhood planning, the environment, hazard and emergency management, public health, crime, and more. Students will learn to work with the most popular Geographic Information Systems (GIS) software, ArcMap.

In the course of the five days of this Introduction to GIS course, students will be working on a small number of case studies and exercises that will introduce them to the key applications and techniques of the ArcMap software. They will learn about data management and database design techniques that are unique to GIS. They will be introduced to some of the basic techniques of manipulating, querying and displaying spatial data. They will learn how to effectively prepare thematic maps using both quantitative and qualitative data. Students will also learn to design effective and professional maps using color shading, dot density, or graduated symbols, and how to prepare map layouts. They will learn to embed their maps in written reports and in PowerPoints, and to save their work in Map Packages.

The data that students will be analyzing will come from a variety of sources and include data for NYC, USA and some international data. In most class exercises, students will be working with data distributed by Prof. Naphtali. They will also learn how to find and acquire GIS data on their own. They will learn to manage these spatial data, and prepare them for mapping. These data will be used in homework assignments and for the required final GIS projects.
The main objective of this course is to provide students with hands-on mapping skills using the ArcGIS software as well as with an understanding of the various applications of GIS techniques. Students will be able to make full use of newly acquired mapping skills in their work in other courses at Wagner, and in Capstone projects at Wagner. Students will also be prepared to apply the new mapping skills in their current work outside Wagner, and in their future public service professional careers.

**Course requirements**

Students will be asked to complete two small homework assignments. [Details will be discussed in class]. Students must also submit a proposal for a small Final Project on the third day of class (June 7). Students will be asked to read chapters in the required book and in select articles. The Final Project paper and the Report on the Reading will be due on the last day of class (June 21). [See page 6 for details]. All assignments must be completed on time. Attendance in all five classes is required.

**Grading**

Grading will be based on the following: (1) class participation and attendance; (2) the two Homework Assignments (30% of the grade), (3) the Final Project Report (50% of the grade) and on (4) the Report on the Reading (20% of the grade).

**Required Readings:**

The report on the reading is due on the last day of class.

Students should start reading the assigned materials immediately after the first class.

Two short articles – are available on Blackboard:


- Juliana Maantay & John Ziegler, *GIS for the Urban Environment* (ESRI Press, 2006); Chs. 1 to 6 and a choice of THREE of the Case Studies. This book is available at the NYU Bookstore and on Amazon. Note that four copies are available on reserve at Bobst Library.

**Highly Recommended Book:** Also available at Bobst, Amazon, and the NYU Bookstore.

- Ormsby, et. al., *Getting to Know ArcGIS* for ArcGIS 10, 3rd Edition (ESRI Press, 2010). Chapters will be assigned.
Class Schedule

(1) In the first two classes -- May 24 and 31 students will learn to work with the popular Geographic Information Systems (GIS) software ArcMap. They will learn to prepare maps using this software package. They will be introduced to sources for data and maps on the internet.

The first two classes are designed as an introduction to ArcMap. Students will learn some of fundamental GIS concepts and common tasks, to navigate the ArcMap interface, and prepare some basic maps. They will also learn to query databases in ArcMap, to label features (e.g. streets), to use the variety of tools available in ArcMap, to find features on their maps, to measure distances between features, and to zoom and pan their maps, and more. Students will also learn about some of the best sources for GIS data and maps

In the first class – May 24 -- after completing the first exercise students will be introduced to a way of saving their work with Map Packages (mpk). This is a new feature that was first introduced in the current version -- ArcGIS 10. Saving Map Packages (mpk) greatly facilitates sharing map documents with others and also when moving one’s work from one computer to another. Students are required to save their work on Flash Drives which will be collected at the end of every class. [Please buy two 4GB flash drives and bring them to the first class]. The second class – May 31 -- will be devoted to exploring sources for GIS data for mapping. Students will explore various resources on the web during class. They will be introduced to sources for Census Data. They will learn to “join” the data to maps. They will explore the data and maps available from the following:

(a) The NYC Department of City Planning - Bytes of the Big Apple
(c) The New York State Empire State Development, State Data Center Web Site http://www.empire.state.ny.us/NYSDataCenter/GeographyMapping.html
And by subscription (e) www.infoshare.org, a website with data on immigration trends, socio-economic indicators, birth and death data, and hospitalizations, local trade data, etc. Students will also be introduced to some international data, one example is http://en.openei.org/wiki/SWERA/Data. On this website there is data (and numerous shapefiles) for various countries around the world.
The data and maps that students download from some of these websites will be used for mapping exercises in the course of this class, for some homework exercises, and for the required Final Projects.

May 31  GUEST PRESENTATION (Tentative)  Census Bureau

Homework #1 will be assigned after the second class

This first homework assignment will build on, and extend, what they learned in the first two classes. Note that for all the homework assignments in this class, students will be asked to prepare Map Packages (mpks), pdfs, bring the pdfs into a PowerPoint, and embed their maps in a Word document. In this Word document, students will also be asked to discuss the challenges they faced and also report on what they learned completing the homework assignments. The work will be saved on the Flash Drive which students will submit to Professor Naphtali.

Required Reading #1: Start reading after the first class.


NOTE: The article will be available on Blackboard.

(2) The third and fourth classes – June 7 and 14 – Mapping Data on Land Use

These two classes will be devoted to learning to map land use data (from the MapPluto files) focusing on the South Bronx. Students will map areas with open space, industrial, manufacturing and commercial land uses and also map some public facilities and institutions. Completing these mapping exercises will introduce students to a number of new skills and mapping techniques.

Students will also map crime data and will be learning about methods of selection in ArcMap, including “select by attributes” and “select by location” and how to define more complex logical conditions for selections from datasets.

Time permitting, students will also be introduced to Geocoding Addresses.

June 14  GUEST PRESENTATION  To be announced
**Homework #2:** Students will be asked to complete several small exercises mapping land use in the South Bronx, and symbolizing Census 2000 data on population, income and poverty extending what they learned in class. In addition, they will be map crime data for the Bronx, Manhattan, northern Brooklyn and Queens.

**Required Reading #2:** Students should read TWO more Case Studies of their choice in the Maantay and Ziegler book, *GIS for the Urban Environment*. They should also skim the more chapters in this book such as Chapter 4 on “Data Classification Methods and Data Exploration,” Chapter 5 on “Data Visualization and Map Design” and Ch. 6 on “Sources of Urban Data.”

Students are required to read the article on reserve by George Dailey, “Normalizing Census Data Using ArcMap,” *ArcUser*, January–March 2006, pp. 52-53; [This article will be available on Blackboard].

**(3) On June 21, the 5th and last day of class,** students will be working on a Case Study that involves mapping “Car Ownership and Population Density in Proximity to the Number 7 train in Queens.” This class will be devoted to completing the work on this Queens Case Study. Time permitting, in the second part of this last class, some students will be present their Final Project papers (Using PowerPoints).

**June 21 GUEST PRESENTATION To be announced**

**SOME GENERAL INFORMATION:**

At the end of each class, students are required to submit all the work they completed during class to Prof. Naphtali on a Flash Drive. Students must also report (in a Word document) on their experience working on the exercises or case studies in class.

Students must have **two** four gigabyte USBs (Flash Drives) to store the data that will be distributed in class, their homework assignments, the Final Project and the Report on Reading.

**GUEST PRESENTATIONS:**

Presentations by leading GIS professional are an important part of this course.

At least two to three presentations by leading GIS professionals are planned for this class.
COURSE REQUIREMENTS AND GRADING

REPORTS ON READING, HOMEWORK and FINAL PROJECTS

A REPORT ON READING  20% of your grade  (at least 4 pages long)
Sample reports on reading will be available on Blackboard.  [Please consult page 2]

TWO HOMEWORK ASSIGNMENTS  30% of your grade
Students are expected to complete two homework assignments. Details will be discussed in class and will also be available in writing in the class packages I will be distributing in class.

In addition, please save on the USB all the work completed in during class and as homework assignments. Include the mpks, the pdfs, the PowerPoint and a written report describing your experience completing the work.

FINAL PROJECTS -- 50% of your grade  Six pages of text plus attached maps.
Students have several options for their Final Projects. They can use data provided in class. Alternatively, they can download the data they need from the web. They can also obtain data from projects they are working on in their jobs or Capstone projects. Details about the requirements of the Final Project will be discussed in class and be available in writing.

Proposals for the Final Project papers must be submitted on 3rd day of class.

The Final Project: What should be submitted?

REQUIRED: A printed written report (six or more pages) with embedded maps.

Students are also required to prepare six or more full-page printed maps in color, a printed PowerPoint in color (no more than two maps per page, one per page is preferred).

In addition, students should submit a USB(Flash Drive) on which they will save the Final Project Map packages (mpk), the pdfs, a PowerPoint as well as the written report. The USBs will be returned to the students mailboxes at the Puck Building within a week or two after the course ends.

It is anticipated that by the end of this course, students will have good working knowledge of mapping with ArcGIS. They should be prepared to take the next intermediate course URPL–GP 4649 Geographic Information Systems in Urban Planning II that will be offered next Fall by Professor Naphtali.