A map of earthquake shaking hazards that is used to create and update building codes in the US.
See http://www.esri.com/what-is-gis/overview

Computer Lab at 194 Mercer Street, Room 304
Mondays, 4:55pm - 7:25 pm – September 8, 15, 22, 29,
October 6, 13, 20, 27, November 3, 10, 17, 24 Dec. 1, 8

Instructor: Professor Zvia Segal Naphtali, Ph.D  
zvia.naphtali@nyu.edu
Home/office phone  212-877-1475
Office Hours: on Mondays, before class by appointment

For administrative matters, contact: Craig Radford Schott 
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Prerequisites: This is an introductory GIS course. It is designed for students that do not have prior experience with Geographic Information Systems (GIS).

Syllabus

Learning Objectives and Course Description

Geographic Information Systems (GIS) is one of the most promising newer technologies. It has applications across many fields. This Introduction to GIS course is designed for undergraduate students planning to work as urban planners or as policy professionals in a variety of fields. They therefore need a broad array of skills to work in non-profit and for profit organizations, in government, or as consultants.

This GIS course will introduce students to a broad set of mapping and analysis skills and will provide them with an opportunity to practice these skills in real world environments through various class mapping exercises and special projects. GIS can help in making better decisions. Students will learn, for example, to prepare maps that will help them decide on a course of action, or to evaluate the results of an action or policy. Common examples include real estate site selection, evacuation planning, conservation, etc. Students will also learn to map changes in an area and to anticipate future conditions. By mapping where and how things change over a period of time, students will gain insights into how they behave. For example, studying and mapping the paths of hurricanes or the location of earthquakes can help predict where and when they might occur in the future.
Course Sessions

1  Introductions – About you and about me
   Discussion on “What is GIS?” and “Who Uses GIS?”
   and about the benefits of GIS
   http://www.esri.com/what-is-gis/overview
   Discussion of what will be covered in this course and the course expectations
   About the class folders and the USB Flash Drives.
   GUEST PRESENTATION #1: Himanshu Mistry, Data Services,
   Bobst Library, will show students how to install ArcGIS on
   a PC and a MAC. He will also offer a brief demo and a
   discussion of ESRI’s ArcGIS online.

   Preliminary hands-on exercises - to be continued in class 2
   Introduction to a number of ArcGIS Software exercises
   On the software interface & a variety of tools
   “A Taste of GIS” (On preparing map packages and more)
   Exploring some online resources

2  “A Taste of GIS” Continued -- More hands-on exercises
   On saving Map and Layer Packages
   GUEST PRESENTATION #2: Introduction to ArcGIS Online
   and exploring online resources
   by Dave LaShell of ESRI, NYC office.
   Students will learn how to create interactive maps and share them
   with others http://www.arcgis.com/
   Examine the Gallery and Maps on the ESRI website

3  Making a Map From A to Z
   On thematic mapping:
   Mapping Transportation and Bike Routes in the Bronx
   Mapping population density in the Bronx & more
   An introduction to creating a variety of thematic maps
   Highly Recommended Reading before this class
   Maantay & Ziegler’s book on GIS for the Urban Environment, Ch. 3
   The book is available on reserve at Bobst Library (read before next class.)
   Homework #1 Due next class     Details will be discussed in class today

4  Creating an Overview map & adding a Basemap Layer to your map
   Required Exercises: Gina Clemmer, The GIS 20 Essential Skills,
   2nd Edition (Esri Press, 2013) Chapters 2, 4, 6, 7, and Bonus exercise 7
   Students will start working on these Chapters during this class and
   complete them before next class. During Class #4 there will also be
   GUEST PRESENTATION #3 Alex Lieber, former student of this GIS class.
   Topic: On downloading, preparing, and working with Census Data.
   Homework #1 Due today     Selected students will be asked to present
5 Introduction to the South Bronx Environmental Health and Policy Study
Chapter 8 “Environmental Equity Issues Associated with the Location of Waste Transfer Stations in the South Bronx.” This chapter was written by Prof. Naphtali, (see pp. 263-321)

Required Reading: Ch. 8 “Environmental Equity Issues Associated with the Location of Waste Transfer Stations in the South Bronx.”
Also please read the following highly recommended chapters
   *GIS for the Urban Environment*, Ch.1 & Ch. 6 & Review Ch. 3
   *(take notes)*

6 In this class, students will work on a few more class exercises based on the South Bronx Environmental Health and Policy Study.

**NOTE:** A Preliminary Proposal for the Final Project is due today.

7 Introduction to Land Use data mapping & preparing MapPluto data
   for mapping: Required Exercises: Gina Clemmer, *The GIS 20 Essential Skills*. Chapters 9, 11, 12, and 13. Select two of these chapters and prepare a report with maps. This work will be collected as part of
   *Homework #2* is due on CLASS# 10

8 On grouping Land Use Categories Using ArcMap.
   Introduction to Query Builder.

   GUEST PRESENTATION #4: Steve Romalewski, Director, Center for Urban Research, CUNY Mapping Service.

9 On Mapping Crime Data in the Bronx
   Mapping grand larceny and Median Income in the Bronx
   Mapping rape and Median Income in the Bronx

   Students will also start working during class on exercises from the book by Gina Clemmer, *The GIS 20 Essential Skills*,
   Chapters 18 or 19 or 20; you may also complete bonus exercises 9

10 Mapping Crime Data in Manhattan, Brooklyn, and Queens
   Mapping Narcotics Arrests and shootings in Manhattan
   Mapping rape and Median Income in the three boroughs
   Mapping grand larceny and Median Income in Manhattan
   Question: Are Foreclosures causing Crime?
**HOMEWORK #2 Part 1** is Due today
Mapping crimes in the five boroughs

**HOMEWORK #2 Part 2**
This work is due next class

and also complete the exercises from the book by
Gina Clemmer, *The GIS 20 Essential Skills*,

A draft Proposal for the Final Project is due today

11  Mapping the impacts of Super Storm Sandy on Staten Island
the Rockaways: Transportation, Land Use, and Census Data

**GUEST PRESENTATION #5:**
Introduction to ArcGIS Online by Dave LaShell of ESRI, NYC Office,
on mapping some impacts of Super Storm Sandy on Staten Island.

12  Mapping the impacts of Super Storm Sandy on Staten Island
the Rockaways (continued)

**Introduction to GEOCODING**
Compost Sites in Manhattan, and Crime Data in Staten Island.

**HOMEWORK #3** Working with the ASCII Version of the Facilities file
On file types in ArcMap & Exercises on Impacts of Sandy

**HOMEWORK #3 is due next class**

13  Mapping Census Data on Mode of Travel in the Tri-State Area

*The GIS 20 Essential Skills book*, chs. 16, 17, 18, 19, 20 (Complete at least 3)
Continue the work during the week & bring the results to the next class

**GUEST PRESENTATION #5** by David Kraiker, Geographer, Census Bureau
New York Regional Office
Downloading and preparing Census data for the Tri-State Area

14  (last class)  **Final Project Student Presentations**

There will be a limit of 10 minutes for each student’s PowerPoint presentation.
Students must also prepare a two page summary of their Final Projects and
embed in it at least three of their best maps. This two page summary will be shared with
members of the class so please prepare copies. Note that Professor Naphtali will
consider the opinions of class members when grading the Final Projects.

**IMPORTANT NOTE:**
The Final paper and the Report on Reading are due on the last day of class
and no later. Below is a list of the reading assignments
Pre class reading, Course Textbook & Recommended Reading

**Required** reading before the first class. Students should take notes for a class discussion on “What is GIS?”

http://www.esri.com/~media/c371f47805c345fa84d32ac8a675046e.pdf

**Required Textbook for this class.**


Various chapters will be assigned

**Recommended Reading:**

Available on NYU Classes Site


**Recommended Chapters in Books**  --  Students should choose **at least one** of the recommended books listed below, and take notes on at least two chapters.

**RECOMMENDED READING IN BOOKS ON RESERVE AT BOBST**


Highly recommended are Chapters 1 and 3. Students should also read at least THREE Case Studies in this book.

(2) Heather MacDonald and Alan Peters, *Urban Policy and the Census* (ESRI Press, 2011); Please read Chs. 1-2, 5 & any other chapter of your choice.


Students should submit a report on all their readings on last day of class. The length of the report should be at least 6 pages. Note: It is anticipated that by the end of this Introduction to GIS course, students will have good working knowledge of mapping with ArcGIS 10.

**The Final Project**

All students are required to complete a Final Project. The Final Project should involve an actual community issue and should be related to a student’s broader career interests. The Final Project Report should be roughly 10 pages and should be accompanied by full page color maps (six or more). Everything must be submitted on the last day of class. Be sure to draw directly on course readings in your Final Project Report. A hard copy of the proposal for the final project is due on the 6th day of class. Further details about the final project will be discussed in class and will be available in writing.
Course Objectives, Competencies & Skills

The objectives of this course are to aid students in developing a set of mapping skills for answering many relevant questions in their fields of interest. These mapping skills also include critical thinking, problem identification, and data analysis skills.

Course Grade

The course grade will be based on the following:

Class Participation (10%)
Three Homework Assignments (30%)
  Homework #1 is due on the 3rd day of class;
  Homework #2 is due on the 5th day of class
  Homework #3 is due on the 7th day of class
Reading Report (10%) Due on the last day of class
A Final Project Presentation (10%)
Final Project (40%) Due on the last day of class

You will also be asked to submit a short resume at the beginning of this class as well as to share with the professor at the end of this class what you have learned taking this class.

Class participation, sharing your work, and attendance

Class participation is an important part of this course and so is your willingness to share your maps with others. Please complete the document that Prof. Naphtali will distribute. Note that a percentage of each student’s grade will also be based upon the extent and quality of participation in discussions during class. Attendance in class is a prerequisite for active participation; therefore unexcused absences will result in a lower grade.

Setting up a meeting with Prof. Naphtali

There will not be official office hours in this class. To schedule a meeting with me please indicate on the sign-up sheet that I will distribute during the first class your preferred days and times.