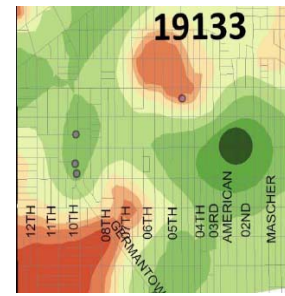
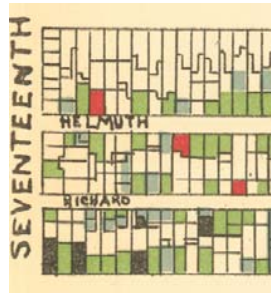


# URBS330/URBS530 GIS Applications in Social Science



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## OBJECTIVES

This course is intended as a hands-on introduction to vector GIS using ArcView 10 software. Vector GIS data are appropriate for modeling geographic objects, such as bounded areas (census tracts or service districts), specific locations (buildings or events such as crimes), and networks (streets). Students will develop skills necessary for carrying out basic GIS projects and for advanced GIS coursework. We will focus on ways that GIS is and could be applied to urban history, health, criminology and social services. The class also aims to help students develop an understanding of what is spatial, when GIS is appropriate for answering question, and to develop an awareness of the power issues involved in map-making. By the end of this course, you should be familiar enough with ArcGIS 10 to find, map, and analyze data using basic GIS tools and be able to teach yourself additional GIS skills using the help files, online materials, and software manuals. This course is specifically designed to prepare you for your senior thesis, spring or internship, and intermediate GIS courses (LARP741 and LARP743).

## GRADING

Your grade will be based on class participation (10%), homework assignments (60%), and a final project (30%).

**A+** Exceptional   **A** Outstanding   **A-** Excellent   **B+** Very good   **B** Good   **B-** Competent   **C+** Fair   **C-** Marginal

## ELECTRONIC DEVICES

Please show consideration for the instructor and your classmates by not using cell phones (including text-messaging) at all during class and not using the computers during the discussion and lecture part of class.

## ATTENDANCE POLICY

Attendance at all classes is expected and will be factored into the class participation portion of your final grade. Because we will cover new conceptual and technical material every week, it is difficult to make up a missed class. If an emergency arises and you must miss class, please contact the instructor in advance.

## COURSE MATERIALS

A manual for working with ArcGIS 10 is available on Blackboard (under "GIS Materials") as well as series of exercises that reinforce material covered in class. You are not required to complete the exercises, but you are encouraged to complete them as they are helpful to you. All of the data for the course is available on the data cd-rom that will be distributed in class. You will also receive a free one-year student edition of ArcView GIS 10 software.

## WEEKLY READINGS

Short readings for each class have been posted to Blackboard. You are expected to read these prior to coming to class in order to participate in class discussions. Additional suggested readings will also be listed for those particularly interested in specific topics.

## CLASS SCHEDULE

	Date	Lecture and Discussion	Readings	Lab
1	September 5	Why we make maps; maps as Propositions	<ul style="list-style-type: none"><li>• John Krygier, "Ce n'est pas le monde"</li><li>• Amy Hillier, "Mapping for social change: harnessing the potential of new technologies" in <i>Paradox of Urban Space</i></li></ul>	Introduction to ArcMap, data formats, saving files
2	September 12	Mapping Du Bois	<ul style="list-style-type: none"><li>• W.E.B. Du Bois, <i>The Philadelphia Negro</i></li><li>• Amy Hillier, "Invitation to Mapping," <i>Journal of Planning History</i>, 2010</li></ul>	Map symbology, thematic maps
3	September 19	Historical mortgage redlining	<ul style="list-style-type: none"><li>• Thomas Hanchett, "The Other 'Subsidized' Housing," Chpt. 8 of <i>From Tenements to the Taylor Homes</i>, 2000</li></ul>	Joining attribute tables, calculating values
4	September 26	Highway construction and urban renewal	<ul style="list-style-type: none"><li>• Christopher Klemek, <i>The Transatlantic Collapse of Urban Renewal</i>, selections</li></ul>	Georeferencing historical maps
5	October 3	Existing inequality in the social and built environments	<ul style="list-style-type: none"><li>• Aaron Levy, "The Linear Mile"</li><li>• Elijah Anderson, "Down Germantown Avenue"</li><li>• Brewer, <i>Designed Maps</i></li></ul>	Labeling and map layouts
6	October 10	Homeless services	<ul style="list-style-type: none"><li>• Culhane, Lee &amp; Wachter. 1996. Where the Homeless come from. <i>Housing Policy Debate</i> 7(2): 327-365.</li></ul>	Mapping census data
7	October 17	Prisoner re-entry and sex offender residency restrictions	<ul style="list-style-type: none"><li>• Levenson &amp; Cotter, "Effect of Meghan's Law on Sex Offender Reintegration."</li><li>• Kimerling et al, <i>Map Use</i>, Chapt. 3</li></ul>	Geocoding addresses, spatial joins
8	October 24	Geography of the presidential election	<ul style="list-style-type: none"><li>• William Frey, "How did race affect the 2008 presidential election?"</li></ul>	Google Earth and web-based mapping applications
9	October 30	Healthy Food Access	<ul style="list-style-type: none"><li>• The Reinvestment Fund, "CDFI Financing of Supermarkets in Underserved Areas," 2008</li></ul>	Buffers, calculating distance
10	November 7	Physical activity and parks	<ul style="list-style-type: none"><li>• Rodriguez et al, "Out and about: Association of the built environment with</li></ul>	GPS, animation, and Tracking Analyst

			physical activity behaviors of adolescent females," <i>Health Place</i> , 2012	
11	November 14	Outdoor Advertisements	• Hillier et al, "Clustering of Unhealthy Ads Round Child-serving Institutions," <i>Health &amp; Place</i> 2009	Attribute and location queries
12	November 21	optional—open lab		optional—open lab
13	November 28	Qualitative GIS	• Kwan & Ding, "Geo-Narrative," <i>PG</i> 2008	Network analyst
14	December 5	Final project presentations	No readings this week	Final project presentations

## HOMEWORK ASSIGNMENTS

You have two options: you can complete five of the following homework assignments and a final project or eight of the following homework assignments. Weekly homework assignments should be posted to Blackboard. Please review the "Assignments" section of Blackboard for updates to these descriptions..

### 1 Maps as proposition, due Tuesday, September 11

Find a map in a newspaper article, website, or journal article that provides a good example of a map as a proposition. In no more than 500 words, explain what proposition the map-maker is making, whether it is effective and why, and what would make it stronger. Please include the map in your assignment.

### 2 Thematic maps, due Tuesday, September 25

Create a series of 4-5 thematic maps with data of your choice that use different types of symbology and classification systems. Which works best? Which tells the most compelling story? Why? Be sure to pay attention to whether you are mapping counts or rates.

### 3 Joining Tables, due Tuesday, October 2

Download data from crimeBase (<http://cml.upenn.edu/crimebase>) or neighborhoodBase (<http://cml.upenn.edu/nbase>). Join the data to the appropriate shapefile and create 2-3 thematic maps. Alternatively, find your own data to join and map.

### 4, Georeferencing historical maps, due Tuesday, October 9

Find an historical map. Scan it (if necessary) and georeference it in ArcGIS. Of what value is your georeferenced map? What new stories can you/could you tell using this map?

### 5 Designing a layout, due Tuesday, October 16th

Create a map layout in ArcGIS that includes labels and an inset map. Export the map as a .pdf. The map will be evaluated based on Brewer's principles of cartographic design.

### 6 Mapping Census Data, due Tuesday, October 23

Create maps showing one or more census variable for the same county over two periods of time (1990 and 2000 will be easiest; if you chose earlier decades, you'll need to use data from [www.nhgis.org](http://www.nhgis.org)). Create polished layouts of both maps. Write a short news article (imagine this is being published in a newspaper so lead with the most important point then provide the details) explaining the changes. Be sure your write-up speaks specifically to the spatial patterns in the two maps.

### 7 Geocoding Addresses, dues Tuesday, October 30

Create and geocode a list of at least 25 street addresses. Be sure to include one or more attributes for your addresses. Map the point data with related areal (polygon) data, being sure to symbolize the points using one of the attributes. For example, you might geocode the location of ATMs, color-coded based on whether they are indoors or outside, with robbery data aggregated by police district. Describe the pattern you see and its implication in 500 words or less. Format your write-up as a brief report or memo for your new boss.

### 8 Mapping in Google Earth, due Tuesday, November 6

Design something meaningful in Google Earth (such as a new map using census data) using layers exported from ArcGIS and/or scanned historical maps. Describe in 500 words or less how Google Earth can be useful beyond ArcGIS.

### 9 Creating buffers and calculating distances, due Tuesday, November 13

Use the buffer tool and the spatial join tool to calculate distances (you can use different data with each tool). Show screen captures of your results and write a paragraph describing how and why you used each tool.

### 10 Designing Queries, due Tuesday, November 27

Using data of your own choice (not data used in class), conduct a combination attribute and location query. Describe the problem or question you are addressing and list the steps you used to answer it. Please include a map showing the results of each step of the query including a final map with the “answer” that does not include any blue highlighting (use permanent symbology).

### 11 Network Distances, due Tuesday, December 12

Use Network Analyst with your own shapefiles to create service areas (network buffers), determine driving directions, and calculate network distances. Create screen captures of each. Describe how/why you used these tools to solve a problem related to distance/logistics.

### Final project, due Tuesday, December 18

The final project requires you to pose a question, find or collect your own data, create maps and conduct analyses in GIS to address your question, and write a final paper that describes your methods and results. Your project can be structured as a needs assessment, program evaluation, research report, magazine article, or poster (feel free to suggest other formats). The final product should include 3-5 maps and approximately 2,500 words of text (about 5 pages single-spaced). The maps should be included directly in the paper rather than as an appendix. Be sure to identify your question, its significance to social work/social policy, the spatial dimension of your question (why was mapping necessary/useful?), a brief literature review (include references), explanation of data and methods, a spatial analysis of what you found, and next steps you would take if you were to continue this project.

