URBS 3300/5300: GIS Applications in Social Science - Fall 2022

Instructor: Casey C. Ross (she/her/hers), City of Philadelphia
Email: caross@sas.upenn.edu
Class Meeting: Friday 1:45pm – 4:30pm
Class Location: Perelman 201 Computer Lab (UDAL)
Office Hours: TBD

FALL 2022 COVID-19 REQUIREMENTS

Students must comply with all University requirements regarding COVID-19 if enrolled in this course. Per the University's Summer 2022, individual instructors may decide to require students to wear masks in their classroom. Additional information on the University's Public Health policy is available online.

Students enrolled in URBS 3300/5300 must wear masks during class sessions and in-person office hours or meetings. Students are responsible for providing their own PPE, though the instructor will do their best to make extras available in limited quantities for anyone who forgets to bring their own.

COURSE OVERVIEW

This course is a hands-on introduction to vector GIS using ESRI ArcGIS Pro software. Vector GIS is appropriate for modeling geographic objects such as bounded areas, specific locations, and networks. Students will develop the skills needed to perform basic GIS analysis, preparing them for future advanced GIS coursework.

This course focuses on ways in which GIS is and can be applied to urban history, public health, and equity analyses. Many of the readings use critical geography lenses (including anti-racist, queer and feminist geography lenses), raising issues of power and uncertainty that challenge conventional notions about science and data. The class also aims to help students develop an understanding of what is spatial, when GIS is appropriate for answering questions, and develop an awareness of the power dynamics and inequities inherently involved in map-making.

By the end of this course, students should be familiar enough with ArcGIS Pro to find, clean, map, and analyze data using basic GIS tools, and be able to teach themselves additional GIS skills using online materials and software manuals.

RESERVED STUDY/WORK SPACE

Education Commons room 225 is reserved for URBS 3300/5300 student use every Wednesday from 5:30 PM to 7:30 PM, beginning 9/7/22 and ending 12/21/22. This is a group study room that fits up to 10 people. Please use this space as needed/desired during reserved time; working with your classmates and troubleshooting issues together is one of the best ways to learn GIS. **Collaboration is highly encouraged in this course.** What matters is that everyone does their own work and submits their own unique assignments in accordance with the University's Code of Academic Integrity.

WEEKLY CLASS MATERIALS

The first 30 to 45 minutes of each class will focus on the assigned reading/listening/viewing materials. These materials are critical parts of engaging with GIS and mapping through an equity lens. *Students are expected to come to class prepared to discuss the assigned materials.*

HOMEWORK ASSIGNMENTS

All students must complete homework assignments 1 through 5 and two short reflection papers. After that, students can choose to complete their coursework in one of two ways:

- **Option 1:** complete any *additional* three (3) GIS homework assignments.
- **Option 2:** submit a final project *equivalent in scope to three GIS homework assignments*.

Students must let the instructor know which option they choose by the end of class on Friday, 10/28/2022. Students interested in Option 2 (a final project) must meet with the instructor *prior to* 10/28/22 to discuss their project idea and receive approval.

In addition, **each student must lead the class discussion on one week's readings at least once during the semester**. A sign-up sheet will be provided by the course instructor. This counts towards each student's participation grade. Students may sign up for one additional date, space permitting, for extra credit.

CLASS ATTENDANCE

Pending updated guidance from Public Health Officials and the University's Administration, classes will be in-person for the Fall 2022 semester. Students should arrive on time and prepared. Students are expected to attend all class sessions unless they have spoken to the instructor beforehand regarding specific absences, and those who miss three (3) or more class sessions risk failing the course.

COURSE GRADING

Final course grades will be based on a combination of GIS homework assignments (including the required reflection papers), class participation, and attendance:

- **Homework** = 70% overall course grade
- **Engagement** = 20% overall course grade
- **Attendance** = 10% overall course grade

Each GIS homework assignment and reflection paper is worth 10 points. Most assignments include a detailed rubric. If you meet the basic expectations and requirements outlined in the rubric, you can expect to receive a B (8 points/Good). Rubrics also typically provide additional ways through which students can earn extra points and receive a grade up to an A (10/Outstanding). If a student receives a score of 7.5 or lower on a GIS assignment, they may resubmit it *within 3 days of the original due date.* The highest grade possible for a re-submission is a 9.

If a student completes more than the required number of GIS assignments during the semester, the highest 8 grades (or 5 if that student is doing a final project) will be counted and lower grades will be dropped.

Grades within the A range will be awarded only for work that exceeds the basic project/assignment expectations. An A+ grade cannot be earned on homework assignments but can be earned as a final course grade in instances of exceptional/outstanding work and effort over the course of the semester.

A+	A	A-	B+	B	B-	C+	C
Exceptional	*Outstanding*	*Excellent*	*Very Good*	*Good*	*Competent*	*Fair*	*Marginal*
10	*9.5*	*9.0*	*8.5*	*8.0*	*7.5*	*7.0*	*6.5*

FALL 2022 CLASS SCHEDULE

9/2/22 - CLASS 1: MAPS AS PROPOSITIONS AND PROTEST

Required reading:

- Krygier, D. W., Wood, D. "CE N'EST PAS LE MONDE." *Rethinking Maps,* edited by Martin Dodge,
- Kurgan, Laura. *Close Up At A Distance: Mapping, Technology, and Politics.* Zone Books, 2013. pp. 19-36.
- Drozdz, M. (2020) Maps and Protest. *International Encyclopedia of Human Geography,* Elsevier, 367-378.

GIS Topics:

- Course Overview
- Introduction to ArcGIS Pro
- Panning & Zooming
- Layering Maps
- Identifying attributes

Associated Assignment: Reflection Paper 1 (due 9/8/22 @ 5pm)

9/9/22 - CLASS 2: SOCIAL SURVEY MOVEMENT & PUBLIC SOCIOLOGY

Required reading and viewing:

- Du Bois, W. E. B. (1899). The Philadelphia Negro: A Social Study. *Publications of the University of Pennsylvania series in Political Economy and Public Law*, 14.
- Video: A Legacy of Courage (19 minutes)
- O'Beirne, J. (2016, April). *What Happened to Google Maps?*. justinobeirne.com. https://www.justinobeirne.com/what-happened-to-google-maps
- O'Beirne, J. (2016, April). *Cartography Comparison: Google & Apple Maps*. justinobeirne.com. https://www.justinobeirne.com/cartography-comparison (intro only!)

GIS Topics:

- Managing Projections
- Map symbology
- Thematic Maps

A*ssociated Assignment:* Thematic Mapping (due 9/19/22 @ 5pm)

9/16/22 - CLASS 3: PHILADELPHIA'S BLACK BOTTOM & GUEST LECTURE BY ADAM SUSANECK (@SEGREGATION_BY_DESIGN)

Required reading and viewing:

- Ross, C., Susaneck, A. (2022). *Segregation by Design* primer handout.
- Puckett, John L., and Mark Frazier Lloyd. *Becoming Penn: The Pragmatic American University, 1950-2000.* University of Pennsylvania Press, 2015. pp. 88-177.
- Orso, Anna. "How 'Penntrification' turned Black Bottom into University City, and changed the neighborhood forever." *Billy Penn,* 5 August 2015. https://billypenn.com/2015/08/05/how-penntrification-turned-black-bottom-into-university-city-and-changed-the-neighborhood-forever/
- Video: Walter Palmer, former Black Bottom resident (28 minutes)

GIS Topics:

- Georeferencing Historic Maps
- Labeling GIS Features
- Creating complete layouts

Associated Assignment: Georeferencing & Layout (due 9/26/22 @ 5pm)

9/23/22 - CLASS 4: CARCERAL GEOGRAPHIES PART 1

Required reading and viewing:

- Video: Laura Kurgan explains Million Dollar Blocks (20 minutes)
- Cadora, E., Kurgan, L., Reinfurt, D., Williams, S., Meisterlin, L. (2006). Architecture and Justice. *The Architectural League Spatial Information Design Lab,* Columbia University Graduate School of Architecture, Planning, and Preservation.
- Moran, Dominique. *Carceral Geography: Spaces and Practices of Incarceration.* Ashgate, 2014. pp. 60-70.

GIS Topics:

- Joining attribute tables to shapefiles
- Calculating attributes in tables

Associated Assignment: Joining Tables (due 10/3/22 @ 5pm)

9/30/22 - CLASS 5: CARCERAL GEOGRAPHIES PART 2

Required reading and viewing:

- Ross, C. (2021). *Accessing US Census Data and Shapefiles* step-by-step guide.
- United States Census Bureau: Understanding and Using American Community Survey Data: What All Data Users Need to Know
- Kirk, D. S. (2019). Where the Other 1 Percent Live: An Examination of Changes in the Spatial Concentration of the Formerly Incarcerated. *RSF: The Russell Sage Foundation Journal of the Social Sciences,* 5(1), 255-74.
- Annamma, S. (2018). Mapping Consequential Geographies in the Carceral State: Education Journey Mapping as a Qualitative Method With Girls of Color With Dis/abilities. *Qualitative Inquiry,* 24(1), 20-34.

GIS Topics:

- Mapping Census Data (part 1)

Associated Assignment: Census Data 1 (due 10/10/22 @ 5pm)

10/14/22 - CLASS 6: HIV/AIDS RISK, TREATMENT, AND ELIMINATION STRATEGIES

Required reading:

- Shabazz, Rashad. *Spatializing Blackness: Architectures of Confinement and Black Masculinity in Chicago.* University of Illinois Press, 2015. pp. 97-113
- Goldenberg, S.M., Deering, K., et. al. (2018). Community mapping of sex work criminalization and violence: Impacts on HIV treatment interruptions among marginalized women living with HIV in Vancouver, Canada. *International Journal of STD and AIDS,* 28(10), 1001-1009.
- Measuring Racial and Ethnic Diversity for the 2020 Census, Jensen et. al, United States Census Bureau, 2021.

GIS Topics

- Mapping Census Data (part 2)

Associated Assignment: Census Data 2 (due 10/24/22 @ 5pm)

10/21/22 - CLASS 7: GEOGRAPHIES OF MIGRATION AND IMMIGRATION

Required reading:

- Ehrkamp, P. (2017). Geographies of migration I: Refugees. *Progress in Human Geography,* 41(6), 813-822.
- Ehrkamp, P. (2019). Geographies of Migration II: The racial-spatial politics of immigration. *Progress in Human Geography,* 43(2), 363-375.
- Conlon, D., Hiemstra, N., Mountz, A. (2017). Spatial Control: Geographic Approaches to the Study of Immigration. *Global Detention Project,* Working Paper 24.

GIS Topics:

- Geocoding addresses
- Spatial Joins (aggregation)

Associated Assignment: Geocoding (due 10/31/22 @ 5pm)

10/28/22 - CLASS 8: MAPPING FEAR & SAFETY — QUALITATIVE METHODS

Required Reading

- Weibe, D. J., Guo, W., Allison, P.D., Anderson, E., Richmond, T.S., Branas, C. C. (2013). Fears of Violence During Morning Travel to School. *Journal of Adolescent Health,* 53(1), 54-61.
- South, E. C., Kondo, M. C., Cheney, R. A., Branas, C. D. (2015). Neighborhood Blight, Stress, and Health: A Walking Trial of Urban Greening and Ambulatory Heart Rate. *American Journal of Public Health,* 105(5), 909-913.
- Boschmann, E. E., Cubbon, E., (2013). Sketch Maps and Qualitative GIS: Using Cartographies of Individual Spatial Narratives in Geographic Research. *The Professional Geographer,* 66(2), 263-248.

GIS Topics:

- Euclidean Distances & Buffers
- Network Distances

Associated Assignment: Buffers & Distances (due 11/7/22 @ 5pm)

11/4/22 - CLASS 9: MAPPING FEAR & SAFETY — FEMINIST PERSPECTIVES

Required reading:

- Kwan, M. (2007). Affecting Geospatial Technologies: Toward a Feminist Politics of Emotion. *The Professional Geographer,* 59(1), 21-34.
- Kwan, M. (2008). From oral histories to visual narratives: re-presenting the post-September 11 experiences of the Muslim women in the USA. *Social & Cultural Geography,* 9(6), 653-669.

GIS Topics:

- Attribute Queries
- Location Queries

Associated Assignment: Queries (due 11/14/22 @ 5pm)

11/11/22 - CLASS 10: FOOD SHOPPING AND FOOD ACCESS

Required reading & viewing:

- Hillier, A., Chrisinger, B. "The Reality of Urban Food Deserts and What Low-Income Food Shoppers Need." *Social Policy and Social Justice,* edited by John L. Jackson, Jr, University of Pennsylvania Press, 2016, pp. 74-86.
- Cantor, C., Beckman, R., Collins, R.L., Dastidar, M. G., Richardson, A. S., Dubowitz, T. (2020). SNAP Participants Improved Food Security And Diet After A Full-Service Supermarket Opened In An Urban Food Desert. *Health Affairs,* 39(8), 1386-1394.
- Video: Access to Healthful Foods (15 mins)

GIS Topics:

- Editing Shapefiles

11/18/22 - CLASS 11: ENVIRONMENTAL RACISM & ENVIRONMENTAL JUSTICE

Required reading:

- Banzhaf, S., Ma, L., Timmins, C. (2019). Environmental Justice: The Economics of Race, Place, and Pollution. *Journal of Economic Perspectives,* 33(1), 185-208.
- Villarosa, Linda. "Pollution Is Killing Black Americans. This Community Fought Back." *New York Times Magazine,* online, 28 July 2020.
- "Environmental Racism." Last Week Tonight with John Oliver, created by John Oliver, season 9, episode 9, HBO, 2022. *YouTube,* uploaded by Last Week Tonight, 2 May 2022. https://www.youtube.com/watch?v=-v0XiUQlRLw
- Blount, Levert. "Lake Charles Louisiana & Sacrifice Zones." *TikTok*, uploaded by Levert Blount, 3 May 2022, https://www.tiktok.com/@levertthebassman/video/7093508183884598574

GIS Topics:

- Animation

Associated Assignment: Animation (due 11/28/22 @ 5pm)

11/23/22 - CLASS 12: DISRUPTING HETERONORMATIVITY / QUEERING THE MAP

Thursday/Friday classes on a Tuesday/Wednesday schedule

Required reading:

- Queering the Map website: https://www.queeringthemap.com
- Ferreira, E., Salvador, R. (2015). Lesbian collaborative web mapping: disrupting heteronormativity in Portugal. *Gender, Place, and Culture,* 22(7), 954-970.
- The Philadelphia LGBT Mapping Project: Website & Google map
- Density Tools Handout on Canvas

GIS Topics

- Point Density
- Kernel Density

A*ssociated Assignment:* Density & 3D Maps (due 12/5/22 @ 5pm)

12/2/22 - CLASS 13: QUEER BODIES, QUEER SPACES

Required reading and viewing:

- Gieseking, J. J. (2014). Crossing over into neighborhoods of the body: urban territories, borders, and lesbian-queer bodies in New York City. *Area,* 48(3), 262-270.
- Goh, K. (2018). Safe cities and Queer Spaces: The Urban Politics of radical LGBT Activism. *Annals of the American Association of Geographers*, 108(2), 463-477.
- Video: Queering Spaces (10 mins)

GIS Topics:

- Collecting GPS Data
- Mapping GPS Data

Associated Assignment: GPS Mapping (due 11/12/22 @ 5pm)

12/9/22 - CLASS 14: EXPOSURE TO OUTDOOR ADVERTISING

Required reading and viewing:

- Hillier, A., Chilton, M., Zhao, Q., Szymkowiak, D., Coffman, R., Mallaya, G., (2015). Concentration of Tobacco Advertisements at SNAP and WIC Stores, Philadelphia, Pennsylvania, 2012. *Preventing Chronic Disease,* 12(15).
- Signal, L. N., et. al., (2017). Children's everyday exposure to food marketing: an objective analysis using wearable cameras. *International Journal of Behavioral Nutrition and Physical Activity,* 14(137).
- Video: Outdoor Advertising (13 mins)

GIS Topics:

- Open topic review & in-class work session

ASSIGNMENTS AND DUE DATES

ASSIGNMENT	TOPIC / SKILLS	REQUIRED?	DATE DUE	TIME DUE
Reflection Paper 1	*Class 1 Readings*	Yes	September 8th	5:00pm
GIS Assignment 1	*Thematic Mapping*	Yes	September 19th	5:00pm
GIS Assignment 2	*Georeferencing & Layout*	Yes	September 26th	5:00pm
GIS Assignment 3	*Joining Tables*	Yes	October 3rd	5:00pm
GIS Assignment 4	*Census Data (part 1)*	Yes	October 10th	5:00pm
GIS Assignment 5	*Census Data (part 2)*	Yes	October 24th	5:00pm
GIS Assignment 6	*Geocoding*	Optional[1]	October 31st	5:00pm
GIS Assignment 7	*Buffers & Distances*	Optional[1]	November 7th	5:00pm
GIS Assignment 8	*Data & Spatial Queries*	Optional[1]	November 14th	5:00pm
GIS Assignment 9	*Animation*	Optional[1]	November 28th	5:00pm
GIS Assignment 10	*Density & 3d Maps*	Optional[1]	December 5th	5:00pm
GIS Assignment 11	*GPS Mapping*	Optional[1]	December 12th	5:00pm
Discussion Leader	*Student's Choice (sign up)*	Yes	December 9th	4:30pm
Reflection Paper 2	*Student's Choice (1 week)*	Yes	December 17th	11:59pm
Final Project	*Student's Choice (with approval)*	Optional[1]	December 17th	11:59pm

OTHER IMPORTANT DATES

DATE	REASON
02 Sep 2022	*First URBS 3300/5300 class meeting*
16 Sep 2022	*Guest lecture: Adam Susaneck*
07 Oct 2022	*No class meeting (Fall Break)*
10 Oct 2022	*Drop period ends*
28 Oct 2022	*Final project approval deadline*
23 Nov 2022	*Class meeting on Wednesday (Thanksgiving Break)*
09 Dec 2022	*Final URBS 3300/5300 class meeting*
12 Dec 2022	*Fall term ends*

[1] All students must complete homework assignments 1 through 5 and two short reflection papers. After that, students can choose to complete their coursework in one of two ways. They may either complete any additional three GIS assignments, or they may submit a final project equivalent in scope to three normal GIS homework assignments.