Spatial Thinking, GIS, and Related Methods

Development Sociology 3140

Fall 2018
Lecture: Mondays and Wednesdays, 11:15am-12:05pm, B02 Warren Hall
Lab: Fridays, 11:40am-1:35pm, B30A Mann Library

Instructor	Teaching Assistant
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or by appointment	in Mann Library

Everything happens in space. Knowing where people are located and events occur in space provides clues to understanding processes traditional social analysis techniques may not reveal. In this course we will develop a conceptual understanding of how social processes are patterned in space and learn how to use tools for presenting and analyzing social patterns across space. In-class lectures and activities will provide conceptual and technical foundations for spatial analysis. Lab sessions and assignments will give students a practical introduction to using GIS software to map and analyze spatial patterns.

By the time we are done, you will be able to

- Explain conceptual issues and choices involved in making maps and understanding phenomena that take place across space.
- Use GIS software to create informative maps and justify your choices in displaying information on those maps.
- Gather data, conduct an analysis, and present findings regarding a spatial phenomenon.

Note: We are constantly on the lookout for materials that are current and helpful to you. As a result, this syllabus may change at the instructors' discretion.

Course Components

Lectures   Course lectures emphasize thinking about space and how human activities are spatially situated, introduce key concepts for GIS, present GIS case studies, and include time for discussion. Students who attend lecture, take notes, and ask questions in class and in office hours tend to excel!

Readings   Most readings come from *GIS Fundamentals*, 5th edition, by Paul Bolstad. We will post additional readings on Blackboard. You are strongly encouraged to read the text *before* we meet in lecture. ***If you use an e-book, it is your responsibility to find the sections that correspond to the pages assigned.***

Map Share Once or twice in the semester each student will share with the class a mapping application they have found outside course materials, explaining what the map shows and discussing the choices it represents. Details will come in a handout.

Quizzes We will have quizzes on occasion. Quizzes may focus on lecture and reading material from the previous week. They may also address key concepts or techniques covered earlier. There may or may not be advance notice. Your lowest quiz grade (including 0 credit for quizzes you miss) will be dropped.

Labs During lab sessions, you will apply concepts and techniques presented in lectures using ArcGIS software accessible in the Mann Library computer labs. Lab assignments are due at the beginning of the following lab session. Late labs will lose 5% of possible points if turned in late on the due date and 10% each day afterward. If you have a legitimate excuse for having a late assignment, you must present this excuse (doctor's note, jury duty, etc.) to the TA *before* the lab's due date.

GIS notebook The GIS notebook may be a physical notebook with hand-written notes or a Word document. During each lab assignment, you will record commands, tools, tips, tricks, or procedures that you found useful either for conceptualizing or carrying out the lab assignment. By the end of the course, it will serve as a personal ArcGIS user manual. We will hand out a full description of the GIS notebook in the first lab meeting.

Final Project For your final project, you will identify a question or issue that the tools we learn in this course can address. You will apply several of these tools to conduct an analysis that addresses that question, writing a report and creating map representations that illustrate what you did. You will present your findings to the class. Details will come in a handout.

The Numbers

Item	Grade
Map Share	5
Quizzes	10
Labs	40
GIS Notebook	20
Final Project	25
Total	100%

Making a Good Learning and Teaching Environment

We want to foster a classroom environment that's as conducive as possible to your learning. That requires that all students have a fair chance to pay attention and take part in dialogue and that we can communicate with you without impediment. We have put together these class policies based on our experiences of what does and does not help make this possible.

Course Citizenship. We seek to create a learning community in which issues are explored and class members come to better understand the opposing views on these issues. Therefore, in class discussions we will foster candid exploration of any topic relevant to the course. Students come to this course with

a wide range of views. You should come to class mentally prepared to discuss pertinent topics with people who take positions that differ markedly from yours. Our goal is for all members of the class to feel that their knowledge, experiences, and insights are welcomed and valued, even when other people see things differently. As a course citizen, we expect that you will both calmly explain your views and reasoning and listen to the reasoning and views of those taking positions that you differ on. This requires that we all come from a starting point where we examine assumptions and, rather than taking current arrangements for granted, are open to thinking about the possibilities and limits of alternatives.

Communication. We are available and eager to help you succeed, so please do not hesitate to reach out to us in person or through email. When doing so, please communicate clearly and with courtesy. We will do our best to respond to emails within 48 hours. It will be easiest to reach us during work hours (8am-5pm weekdays). On nights and weekends we may be harder to reach due to personal and family commitments outside of work. Likewise, we will do our best to ensure that our messages to you are clear and leave you ample time to respond. We will provide notifications through email and Blackboard; please check both regularly. ***To ensure that we promptly identify and address your email, please include the text "DSOC 3140" in the header.***

Office Hours. We welcome and encourage you to come and talk about your questions, concerns, and interests. If you need to meet outside scheduled office hours, you can make an appointment. It is usually easiest if you do so by email. Office hours will not be devoted to tutorial for materials that students miss when not attending class. ***If you have questions about content or assignments, please ask them during lecture so we can all benefit from clarification.***

Food is all right; just be considerate. Hunger and thirst make it hard to focus and learn. So you are allowed to have snacks, but be discreet, considering your classmates. If students notify us that snacking is distracting them, we may request that people be more thoughtful, or change this guideline. ***No food in the computer labs, though***.

No Cell Phone Use. Using cell phones in class disrupts your own and other students' learning. Turn your cell phone off when class starts. If there is an emergency reason you must check your phone on a particular day, talk to us about it before class.

Lecture Slides. We will post lecture slides on Blackboard once a week. These slides provide a broad outline; being attentive and taking notes in class will help you retain what we cover.

Labs & Computing

Lab & Computer Access. Our Friday lab meetings will take place in 30A Mann Library, downstairs after you enter Mann Library. Outside our scheduled meetings, this room is often scheduled for other classes. Computers in the Stone Computing Center in Mann Library (to the left when you go in the main entrance) and most of the computer clusters on the first floor of Mann Library are equipped with ArcGIS software.

Data Backup. On the computers in the library lab, files saved in public folders are periodically erased. For labs and individual projects, you will need to keep files you have used or created. ***You should have a backup system (USB memory stick or cloud storage) on which to back up all your class work***. You are responsible for the loss of any work that is not backed up.

Extra Credit Policy

Out of concern for fairness, we do not offer extra credit. An activity that merits grade credit necessarily requires time and effort. But not all students have time available. As a result, extra credit opportunities bring a bias in favor of students who can take extra time. Since this luxury isn't available to all, we aim to give everyone a reasonable chance to do well by meeting the evaluation criteria within this syllabus.

Meeting Your Needs

In compliance with the Cornell University policy and equal access laws, we are available to discuss appropriate academic accommodations that may be required for students with disabilities. Except in unusual circumstances, requests for academic accommodations are to be made during the first three weeks of the semester, so arrangements can be made. Students with either an ongoing or short-term disability are encouraged to contact Student Disability Services (SDS) for a confidential discussion of their need for academic accommodations. SDS is in the Cornell Health building (110 Ho Plaza), level 5; phone number is 254-4545.

If you are experiencing undue personal or academic stress at any time or need to talk with someone about a personal problem or situation, we encourage you to seek support as soon as possible. We are available to talk with you about stresses related to your work in our class. Additionally, we can assist you in reaching out to any one of a wide range of campus resources, including

- Your college's Academic Advising or Student Services Office
- Cornell Learning Strategies Center at 255-6310, http://lsc.cornell.edu
- Cornell Health at 255-5155, https://health.cornell.edu/
- Peer Support - Empathy Assistance & Referral Service at 255-EARS, http://orgsync.rso.cornell.edu/org/ears

Academic Integrity

Students enrolled in this course are expected to abide by the University's Code of Academic Integrity. If you have not already done so, I encourage you to familiarize yourself with the code so that you understand clearly what constitutes plagiarism and cheating. Plagiarism and cheating of any kind on an examination or assignment will have serious consequences, including a possible automatic "F" for the course. The Code of Academic Integrity and information on "Acknowledging the Work of Others" can be found at http://cuinfo.cornell.edu/aic.cfm.

Plagiarism will not be tolerated. All required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism, as well as our own manual review. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

Schedule

Below is the anticipated schedule of lectures, associated labs and homework. A new lab will be started each week. *Readings may be changed or added, in which case we will give advance notice in class or by email.* All lectures, labs and relevant data will be downloadable from the DSOC 3140 Blackboard course site (www.blackboard.cornell.edu).

Date	Topic	Materials
24-Aug	Getting Started	
27-Aug	Intro: What's a map?	Geospatial Revolution
29-Aug	Maps as Models, Maps as Propositions	Krygier & Wood 2009, This Is Not the World. Miller 2018, A Map of Radical Bewilderment.
31-Aug	Lab 1: Intro to Lab & ArcGIS	Bolstad Ch 1
3-Sep	NO CLASS, Labor Day	
5-Sep	Introduction to Map Making	Bolstad Ch 4 pp 147-156, 183-193; Krygier & Wood selections
7-Sep	Lab 2: Creating Map Displays	Bolstad Ch 9 385-393 (Classification); Krygier & Wood selections
10-Sep	Space, Place, and Social Life	Tuan 1979, Space and Place
12-Sep	Data Structures: Vector and Raster	Bolstad Ch 2 pp 40-68 (It's optional to read the rest)
14-Sep	Lab 3: Exploring Data Structures	
17-Sep	Geodesy and Datums	Bolstad Ch 3 pp 85-115
19-Sep	Projections and Coordinate Systems	Bolstad Ch 3 pp 115-137
21-Sep	Lab 4: Projections and Coordinate Systems	Krygier & Wood selection; https://bl.ocks.org/syntagmatic/ba569633d51ebec6ec6e
24-Sep	Data Collection: GPS	Bolstad Ch 5
26-Sep	Data Creation	Bolstad Ch 4 pp 156-182; Ch 6 pp 247-251, 272-273. OPTIONAL: rest of Ch 6; Ch 7
28-Sep	Lab 5: Data Creation	
1-Oct	Attribute Data Structures	Bolstad Ch 8 pp 331-349, Ch 9 pp 385-393
3-Oct	Metadata and Accuracy	Bolstad Ch 4 pp 190-192, Ch 14
5-Oct	Lab 6: Data Attributing	
8-Oct	NO CLASS, Fall Break	
10-Oct	Data Query and Description	Bolstad Ch 9 pp 373-384, 394-395
12-Oct	Lab 8: Basic Analytical Tools: Basic Query and Analysis	
15-Oct	Distance and Buffer	Bolstad Ch 9 pp 396-402, Ch 10 pp 470-473
17-Oct	Map Overlay	Bolstad Ch 9 pp 403-419
19-Oct	Lab 9: Overlay and Buffer	
22-Oct	Raster Data Model	Bolstad Ch 10 pp 460-469
24-Oct	Overlay for Problem Analysis	Bolstad Ch 10 pp 454-459; Ch 13 pp 577-591
26-Oct	Lab 10: Mapping Pollution Risk	
29-Oct	Guest Lecture: Walter Hang	Toxics Targeting: http://toxicstargeting.com/
31-Oct	Analyzing Land Use and Land Cover Change	TBA

2-Nov	Lab 12: Developing a Least-cost Path Model	Bolstad Ch 10 pp 470-473
5-Nov	Network Analysis	Bolstad Ch 9 pp 420-425
7-Nov	Mapping Flood Risk, with David Kay	TBA
9-Nov	Lab: Network Analysis	
12-Nov	Mapping and Development	TBA
14-Nov	Critical Cartography, Participatory Mapping, Counter-Mapping	Rattray 2015, Akom 2016
16-Nov	Lab: Advanced Tools	TBA
19-Nov	project work	
21-Nov	project work	
23-Nov	Thanksgiving Break	
26-Nov	Presentations	
28-Nov	Presentations	
30-Nov	Presentations	
3-Dec	New Horizons in GIS & Mapping	Mah 2016