RPOS 598:
METHODS IN PRACTICE – SPATIAL ANALYSIS

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Location: HU 004
Time: Tue 4-7pm (irregular)
Office Hours (in HU 016):
TBA
or by appointment

Course Description. This course is designed as a brief, applied introduction to spatial analysis. Students are expected to gain a practical, working understanding of the concept of spatial dependence, theoretical implications derived from the interdependence of spatial units, how to collect data and organize data sets for spatial analysis, basic exploratory techniques, as well as more advanced applications to test or confirm hypotheses using spatial econometrics. No software needs to be purchased for this class. The main software utilized for analysis will be the free, open source GeoDa (available at: http://geodacenter.asu.edu/), but students will also learn how to move data back and forth between GeoDa and ArcGIS, and how to organize and visualize data in both software environments. ArcGIS is available in all campus computer labs, including Dewey Library.

“Methods in Practice” Format. The condensed and applied structure of the course follows the two-day “short course” format of many professional conferences and methods institutes (e.g., APSA, ICPSR), repackaged as a 1-credit class. The course is intended to complement the department’s formal methods sequence, exposing graduate students to research techniques that may be useful in thinking about, designing, and/or completing their theses or dissertations. While not part of the formal methods sequence, the offerings within the methods practicum format are formalized in two-year increments in order to give students a sense of when to expect particular topics to be covered during their graduate career. Each semester alternates between a quantitative and a qualitative technique, providing a range of special, optional offerings within the department but outside the required methods sequence. Offerings are not required, but graduate students are strongly encouraged to attend.

The main course requirements are participation and either (a) a replication of or (b) a review of a published paper that employs spatial analysis.

Pre-requisites. There are no pre-requisites for this course. However, prior courses in research design and statistics are strongly recommended.

* CLASS MEETINGS *

Class meets 4-5 times throughout the semester, depending on the length of meetings and pace of activities. A computer classroom, HU 004, is reserved for us on Tuesdays from 4-7pm. At each class, we will meet for approximately 3 hours.
Readings

Readings. The main text for this course is:


The above reading will be supplemented periodically with journal articles and other short pieces. Please see the class schedule below for a detailed list of the reading assignments. Articles and other short pieces are available on Blackboard and/or via the electronic databases that can be accessed through the library (e.g., JSTOR). Where otherwise unavailable, I will provide these materials for you.

Grading

- Participation: 70%
- Replication or Review: 30%

**Participation:** This is primarily a lab-oriented course. That is, we will spend our time in the computer lab, working through different phases of spatial analysis. Thus, you are expected to read and come prepared to actively apply the covered material in lab exercises and engage in discussions. Your contributions should be related to the material and constructive. Differing opinions are encouraged as long as they are relevant and respectful. You are also expected to promote a classroom environment that makes it easy for your peers to engage with the material. In this regard, please keep distractions to a minimum. With regards to technology in the classroom, please turn your phones and other handheld devices off during class. Texting during class is unacceptable. Laptop and computer use is allowed for taking notes and other activities relevant to class, but sending emails, instant messaging, checking social media, or watching videos online is unacceptable. If you are engaged in any of these distracting activities, or otherwise using technology inappropriately in the classroom, you will be asked to leave for the day. If this happens a second time, you will receive a zero (0) for your participation grade.

**Replication or Review.** A replication or review of a published paper that employs spatial analysis is the final requirement for this course. **Replication:** This option is most useful if you already have a project of your own in mind and know of a related paper that uses spatial analysis. If you can acquire the data from that paper, then you can re-do their analysis in an area that is already conceptually and theoretically familiar to you. In this way, you might identify alternative, un-tested explanations, ways to add data to test those explanations, or perhaps other ways to organize or use the data from that paper. If you are interested in the replication option, please speak with me so that we can try to acquire the data as soon as possible. **Review:** If you are not yet working on a clearly defined project of your own, or are not yet sure if you would like to integrate spatial analysis into your own work, conducting a detailed review of a published paper on spatial analysis may be the best option. Please ask if you would like help identifying a paper close to your research interests.
The assignment should follow the structure set out in the detailed instructions, which I will distribute later in the semester. Make sure you refer to this document in preparing your work for this assignment. We will also discuss the instructions in greater detail in class.

Additionally, make sure to cite all sources properly and include a bibliography. Papers should be double spaced, and use 1-inch margins and 12-point, Times New Roman font.

Email. I expect you to check your email. You are responsible for material sent by email.

Late Work and Missed Assignments. All work must be turned in within the first 5 minutes of class on the day it is due, or by 5pm if there is no class on the due date. Without a legitimate (e.g., medical or family emergency) and documented explanation, late work will be penalized one letter grade for each day it is late up to 50% off, and it is considered late if turned in beyond the time limits above (i.e., after the first 5 minutes of class, or after 5pm on days there is no class; this includes weekends and holidays).

Academic Integrity. All students must familiarize themselves with the Standards of Academic Integrity on the University’s website and pledge to observe its tenets in all written and oral work, including oral presentations, quizzes and exams, and drafts and final versions of essays. The full standards and examples of dishonest behavior are available at: http://www.albany.edu/undergraduate_bulletin/regulations.html.

Americans with Disabilities Act (ADA). Qualified students with disabilities needing appropriate academic adjustments should contact me as soon as possible to ensure your needs are met in a timely manner.

Miscellaneous. If you feel you need any help or simply want clarification on any of the material, please do not hesitate to raise your question in class or approach me outside of class. I will hold regular office hours throughout the summer session. If you cannot arrange to come talk with me during these hours, please call or email me, or contact the Department of Political Science administrative offices, so that we can set up an appointment.

**CLASS SCHEDULE**

**Session 1: Introduction; Spatial Concepts and Data**

Reading:

- Anselin: 1-42.

• Download free GeoDa software and data sets from: http://geodacenter.asu.edu

Recommended reading:
• Political Analysis, Special Issue 10(3) (2002)

Session 2: Exploratory Data Analysis (EDA) and Exploratory Spatial Data Analysis (ESDA)
Reading:
• Anselin: 43-77, 78-104

Recommended reading:

Session 3: Exploratory Spatial Data Analysis (ESDA), cont.
Reading
• Anselin: 106-128, 129-164

Session 4: Spatial Regression (Spatial Error and Spatial Lag Models)
Reading:
• Anselin: 165-223
• Review Harbers and Ingram 2013; Tam Cho and Gimpel 2012

Recommended reading:

Session 5: Extensions (categorical data; count data; GWR; temporal dynamics; conceptualizing space and operationalizing dependence; graphing results; network analysis; contextual analysis generally)

Readings: based on student interest from selection below

Categorical dependent variables:

Count or event data:

Duration/survival models:

Geographically Weighted Regression (GWR):

**Temporal dynamics:**


  - Check version: Franzese notes in his own syllabus from August 2013 that students should use a hyperlinked version because “it corrects an error in the printed version”.

**Graphing results:**


**Spatial analysis and network analysis:**


**Conceptualizing/operationalizing spatial dependence:**

*Ingram_SpatialAnalysis_F2013_rev2013-Aug-29*

**Further reading:**

**Additional Resources at UAlbany:**
2. Sociology Department
3. Geography Department
4. Epidemiology Department

**Additional Resources elsewhere:**
1. GeoDa Center for Spatial Analysis and Computation
   - [https://geodacenter.asu.edu/](https://geodacenter.asu.edu/)
2. R
   - [http://www.r-project.org/](http://www.r-project.org/)
4. Spatial Analysis in the Social Sciences (Brown)
   - [http://www.s4.brown.edu/index.htm](http://www.s4.brown.edu/index.htm)
5. Spatial Analysis in the Social Sciences (Michigan)
   - [http://www.isr.umich.edu/cps/events/spatial/](http://www.isr.umich.edu/cps/events/spatial/)
6. Carleton College
   - [http://apps.carleton.edu/collab/spatial_analysis/](http://apps.carleton.edu/collab/spatial_analysis/)
7. Spatial Models of Politics conferences
   - Texas A&M, Feb. 2013: [http://eucenter.tamu.edu/content/scholarly-conference-spatial-models-politics-europe-and-beyond](http://eucenter.tamu.edu/content/scholarly-conference-spatial-models-politics-europe-and-beyond)
8. Peer-reviewed, academic journals publishing spatial analysis in social sciences
   - Political Analysis
   - Political Geography
   - Journal of Quantitative Criminology
   - Demography
   - Population Studies
   - Spatial Demography
   - Criminology