Urban Geographic Information Fall 2016

Systems (Geography XXX)

**Instructor**: Dr. Ryan Burns Office hours: Tues/Thurs 12:30-2, by appt.

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**Meets:** T,R 9:30-11:30, XXX Earth Sciences Building

**General Information**

1. **Purpose of the Course**

This course builds on your previous introductory-level coursework in GIS, through a more in-depth examination of GIS applications in urban studies, and the data structures, source, and analysis techniques used in them. We will explore urban spatial analysis, decision-making in a GIS environment, and representational challenges, including project planning, spatial data acquisition, data preparation and coding, analysis and visualization of project findings, and communication and implementation of project results. You will gain experience in locating and obtaining geospatial data from local, provincial, and national government sources; developing primary data for urban spatial analysis; and analyzing and representing these data using desktop GIS software. You will also be exposed to low-level programming techniques in Python. We examine a range of urban uses of GIS, including crime analysis, emergency management, transportation and routing application, and environmental justice advocacy. Underlying this course is the question of “what is the urban?”, which has been formulated to challenge the often-present assumption of an urban/rural binary. Geography 357 or an equivalent is a prerequisite background for this course.

1. **Learning Objectives**

The course is designed to help you develop:

• An understanding of how GIS is used for planning, problem solving, and decision making in urban places

• Skills for locating, obtaining, and preparing spatial data for urban GIS applications,

• GIS analysis and modeling skills to explore spatial processes and relationships in urban areas

• A richer grasp of the ways representations and data come to shape the ways we think of places and the people in them.

1. **Format**

We will meet Tuesdays and Thursdays for 2 hours each day. The first hour and 15 minutes will be dedicated to lecture, and the remaining 45 minutes to lab time. Please note: Completing the lab activities for Urban GIS will require additional work outside of the 3 regularly scheduled hours. Most students need 3.5-5 hours total to complete each lab. The course reading load is designed to balance this lab commitment (i.e. you have far less reading that I would assign in a non-lab course).

1. **Attendance**

Students tend to work at their own pace on assignments – some need a lot of attention from the instructor and some prefer to work by themselves. I am here to support you and help you learn GIS whatever type of learner you are. Note, however, that the labs are sometimes written without detailed instructions purposefully so that students are required to solve analytical GIS problems using their own knowledge. It is nearly impossible to complete the lab assignments without guidance from the instructor. Thus, prolonged absence from class will likely affect your grade, inhibit your understanding of the lecture material, and prevent you from receiving help on the lab assignments.

1. **Required Texts**

There is no required textbook for this course.

Course readings will be drawn from GIS texts and academic journals reporting on current research supporting urban applications of GIS. The required readings will be available on the course website.

1. **Assignments, Activities, and Grading**

Geography XXX Assignments and Weighting

• 5 Lab Exercises (20 each) (100 points)

• Exam I (100 points)

• Exam II (100 points)

• Final Community Project (100 points)

o Proposal: 15 pts

o Progress report: 15 pts

o Check-ins: No points, but highly recommended!

o Final paper & maps: 40 pts

o Presentation: 30

1. **Important Notices**

**Disabilities:**

Any student who has a need for accommodation based on the impact of a disability should contact Disability Resources and Services at 215-204-1280 in 100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities. Their office will convey your needs to me, but please feel welcome to speak with me privately, as well – my door is (metaphorically) open.

**Well-being:**

College can be stressful, and your mental well-being is important. If you are a student of Temple University, Tuttleman Counseling Services offers you support for your emotional, educational or vocational concerns. Assistance is *confidential* and free of charge. They provide an atmosphere that is informal and professional, where you can feel safe and comfortable seeking help. Find them at 1810 Liacouras Walk (5th floor) or call them at (215) 204-7276.

Your academic advisors can be great advocates for you. While I expect that you will all make an effort to keep me informed if you will be absent, or ask for help if you are struggling, your advisor also can help you find the people at the university that you need to talk to if you have an unexpected life event.

**Academic Dishonesty:**

Academic dishonesty (i.e. cheating on tests, copying another student's assignments, plagiarism, etc.) will not be tolerated. Please refer to this statement for more information on Temple University's Academic Honesty policy: <http://www.temple.edu/pharmacy_qara/plagiarism.htm>. Please feel free to talk with me if such policies are unfamiliar to you.

**Be honest.**

Academic dishonesty, including but not limited to plagiarism, cheating, or submitting academic work that has previously been submitted (without citation or previous permission of instruction) will be penalized. If you have questions about what might constitute a violation of the policy, please see me or review the materials available online at: http://depts.washington.edu/grading/issue1/honesty.htm. Academic dishonesty will be handled according to the University’s Student Conduct Code: http://www.washington.edu/students/handbook/conduct.html.

# Lab Information

1. **Introduction**

About 45 minutes of each class will be devoted to 'lab' where you will be expected to write a technical report for every lab submission. The point of these exercises is to ‘get our hands dirty’ with some innovative ways of collecting, massaging, and representing data for urban planning.

1. **Lab Reports**

Each lab contains an assignment which you are expected to complete.  This assignment will be focused on an analysis task.

For each lab assignment you must hand in a brief report as a Microsoft Word file via Blackboard – click on the assignment in Blackboard and upload your file. ***Do not email me your report.*** I will grade and make comments on your report where applicable, and you can access the commented report via Blackboard.

**This report must be approximately 2 pages in length (of text), single spaced, 12 point TIMES NEW ROMAN\* FONT, with one inch margins, and indented paragraphs.  It should have your name, date, and lab assignment number (e.g. Lab 1) at the top of the page.**

\*=other acceptable fonts: Garamond 12-point, Cambria 11-point.

Points will be deducted for not formatting your lab report correctly.

The report must contain the following five sections:

1. Introduction
2. Methods
3. Results
4. Conclusion
5. Tables and Figures

The name of the section must appear in bold at the top of each section.

The **introduction** section should state the objective - what you are trying to accomplish in your assignment.  Here, your objective is the goal of your analysis, not the learning objective.  *The introduction should NOT (NOT) state that your objective is 'to learn GIS' or something similar!*

The **methods** section should state how you did the analysis, what analytical steps you took to complete the assignment.  This section does not need to state every drop down menu item you selected or every button you pushed, but should summarize what analytical operations you used. For this you should use the GIS jargon we learn in class, e.g. buffer, overlay, and the parameters employed. Be precise in your terminology!

The **results** section should report the results of your analysis. This section is often very brief, as it should be devoid of substantial commentary – just the facts.

The **conclusion** section should offer some interpretation of your results as well as report on any assumptions and limitations of your analysis and what other steps could be taken to improve the analysis.

In addition, the lab may require the creation of maps, tables, and/or charts, as specified in the lab assignment.  These graphics should be appended onto the end of the written report and referred to in the text.

1. **Due Dates**

Due dates are indicated at the top of the lab assignment, and will be the Friday of the week listed in the calendar below.

1. **Working with Other Students**

I encourage students to work together on lab assignments and assist each other in understanding the course material.  However:

**all contents of each student's lab reports (text and graphics) must be authored solely by that student.**

1. **Grading**

Each lab will be graded out of 20 points.

Labs will be graded based not only on whether you ‘get the right answer’, but also on your ability to express yourself in a coherent fashion through both writing and graphics (i.e. maps).

***If a lab report is turned in late, 4 points will be deducted from that lab grade.  No labs will be accepted more than two weeks after their due date.***

**Schedule**

(Note: This is a general plan. The day-to-day topics and lab dates may change as we proceed through the semester).

**Topic 1 – Course Intro / Urban GIS intro – August 23nd-25th**

Batty, M. 2013. Big Data, Smart Cities & City Planning. *Dialogues in Human Geography* 3(3): 274–279.

**Topic 2 – Urban spatial data types & sources – August 30th-Sep 1st**

Manson,S., H. Sander, D. Ghosh, J. Oakes, M.Orfield, W.Craig, T. Luce, E. Myott, S. Sun. 2009. Parcel data for research and policy. *Geography Compass* 3(2): 698-726.

Attard, Judie, et al. “A systematic review of open government data initiatives.” Government Information Quarterly (2015): 1-20.

**Topic 3 – The Canadian Census: Data structures, attributes, and analysis – Sept 6th-8th**

Reading TBA

**Topic 4 – Network analysis & its urban applications – Sept 13th-15th**

Wilson, R. and Cales, B. 2008. Geographic information systems, evacuation planning, and execution. *Communications of the IIMA* 8(4): 13-30.

Comber, A., Brunsdon, C., Hardy, J., and Radburn, R. 2009. Using a GIS-based network analysis and optimization routines to evaluate service provision: A case study of the UK Post Office. *Applied Spatial Analysis* (2): 47-64.

**Topic 5 – Environmental Justice Applications – Sept 20th-22nd**

Bae C-H C, *et al*. 2007. The exposure of disadvantaged populations in freeway air-pollution sheds: a case study of the Seattle and Portland regions. *Environment and Planning B: Planning and Design* **34**(1) 154 – 170.

Nas, B., and Berktay, A. 2010. Groundwater quality mapping in urban groundwater using GIS. *Environmental Monitoring and Assessment* 160: 215-227.

Su, J., Larson, T., Gould, T., Cohen, M., & Buzzelli, M. 2010. Transboundary air pollution and environmental justice: Vancouver and Seattle compared. *GeoJournal* 75: 595-608.

**Topic 6 – Visualizing cities: data surfaces – Sept 27th-29th**

Burns, Ryan, A. Skupin. 2013. Towards Qualitative Geovisual Analytics: A Case Study Involving Places, People, and Mediated Experience.” Cartographica 48(3): 157-176.

Xie, Z. and Yan, J. 2008. Kernel Density Estimation of traffic accidents in a network space. *Computers, Environment and Urban Systems* 32(3): 396–406.

**Topic 7 – Crime analysis – Oct 4th-6th**

Tompson, J., Townsley, M. 2010. (Looking) back to the future: Using space-time patterns to better predict the location of street crime. *Int’l Journal of Police Science & Management* 12(1): 23-40.

Pain, R., MacFarlane, R., Turner, K., Gill, S. 2006. ‘When, where, if, and but’: qualifying GIS and the effect of streetlighting on crime and fear. *Environment and Planning A* 38(11): 2055–2074.

**Topic 8** – **Public health applications – Oct 11th-13th**

Parmenter, B., *et al*. 2008. Developing Geospatial Data Management, Recruitment, and Analysis Techniques for Physical Activity Research. *The URISA Journal* 20(2): 13-19.

Parenteau, M., Sawada, M., Kristjansson, E., Calhoun, M., Leclair, S., Labonté, R., Runnels, V., Musiol, A., and Herold, S. Development of Neighborhoods to Measure Spatial Indicators of Health. *The URISA Journal* 20(2): 43-55.

**Topic 9 – Emergency management – Oct 18th-20th**

Graham, C., C. Thompson, M. Wolcott, J. Pollack, M. Tranh. 2015. A guide to social media emergency management analytics: Understanding its place through Typhoon Haiyan tweets. *Statistical Journal of the IAOS* 31: 227-236.

Fazeli, H., M. Said, S. Amerudin, M. Rahman. 2015. A Study of Volunteered Geographic Information (VGI) Assessment Methods for Flood Hazard Mapping: A Review. Jurnal Teknologi 75(10): 127-134.

**Topic 10 – The ‘open data’ movement – Oct 25th-27th**

Recupero, D.R. *et al*. 2016. An Innovative, Open, Interoperable Citizen Engagement Cloud Platform for Smart Government and Users’ Interaction. *J. of the Knowledge Economy*: 1-25.

Kontokosta, C. 2015. Data and the City: The Promise and Perils of Urban Informatics. <http://www.sallan.org/Snapshot/2015/07/data_and_the_city_the_promise_and_perils_of_urban_informatics.php>

**Topic 11 –** **Volunteered geographic information & the geoweb – Nov 1st-3rd**

Sui, D. 2008. The wikification of GIS and its consequences: Or Angelina Jolie’s new tattoo and the future of GIS. *Computers, Environment and Urban Systems* 32(1): 1-5.

Haklay, M., Singleton, A., and Parker, C. 2008. Web-mapping 2.0: The neogeography of the geoweb. *Geography Compass* 2(6): 2011-2039.

**Topic 12** – **Community-engaged urban GIS – Nov 8th-10th**

Elwood, S. 2006. Beyond cooptation or resistance: Urban spatial politics, community org’s, and GIS-based spatial narratives. *Annals of the Ass’n of American Geographers* 96(2): 323-341.

Esnard, A. 2007. Institutional barriers to the effective use of GIS by community-based organizations. *The URISA Journal* 19(2): 13-21.

**Final project presentations – Nov 15th-17th**