# SYLLABUS
## *GEOG 416C: Urban Geographic Information Systems*
### *Spring 2013*
#### *Harvill 401; Tuesdays 11-12:15pm & Thursday 11-1:15pm*

*Instructor:* Lily House-Peters          *Class location:* Harvill 401
*Email:* lilyhp@email.arizona.edu          *Office Hours:* Mon: 11-noon
*Office:* Harvill 416                    Tues: 2-3pm
                                        &, By Appointment

## COURSE DESCRIPTION

This course will build on your previous introductory-level coursework in GIS (GEOG 417 is a required pre-requisite), through a more in-depth examination of urban applications of GIS. We will explore urban spatial analysis and decision making in a GIS environment, including project planning; spatial data acquisition, preparation, and analysis; and visualization of project findings. You will gain experience in locating and obtaining geospatial data from local, state, and federal government sources; developing primary data for urban spatial analysis; and analyzing and representing data using ArcMap 10.1. We will examine a range of urban uses of GIS, including crime analysis, urbanization and demographic analysis, public health applications, transportation, and environmental/social justice.

Instructional Objectives:
1. You will be able to explore spatial processes and relationships in urban areas through GIS analysis and modeling skills
2. You will be able to utilize GIS software to planning, problem solving, and decision-making in urban spaces
3. You will be able to locate, download, process, and analyze spatial data for urban GIS applications

## COURSE ASSIGNMENTS, ACTIVITIES & GRADING

Course Assignments & Weighting
- Participation/Attendance                                        (50 points)
- Reading Summaries (10 points each)                              (20 points)
- Geoskills Challenge                                             (30 points)
- 4 Lab Exercises (*Lab 1: 50, Lab 2: 50, Lab 3: 50, Lab 4: 50*)   (200 points)
- Exam I (February 28)                                            (100 points)
- Exam II (April 18)                                              (100 points)
- Final Project                                                   (100 points)

Total possible points: 600

## Participation & Attendance

Attendance is required.  Students who miss more than 5 class periods over the course of the semester will experience detrimental impacts on their grade. We have the benefit of a small class, so participation is highly encouraged and will help to improve your grade!

## Required Texts

There is no required text book. Instead 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 under 'Content' on the D2L course page.

## Reading Summaries

Throughout the semester, each student will complete two reading summaries.  I will provide a sign-up sheet for each article and specific instructions on what information to include from the article in the summary.  At the beginning of class, the students who have completed a summary for that day's reading will describe the most important information from the article to the class.

## Geoskills Challenge

On Thursday, January 17th, I must miss class to attend a required workshop.  You will complete a fun Geoskills Challenge project.  The instructions are posted to the D2L site under "Content" and Dropboxes have been set up for you to upload the final products.

## Lab Exercises & Lab Reports:

There are 4 lab exercises.  Each lab will have 3 Thursday lab periods to be completed. Some labs may require additional outside time to complete.  Each lab is worth 50 points.

For each lab you will generate a **digital** report using the templates provided. These reports should contain the answers and figures requested in the lab handouts. Answers must be distinguished with **bold** and/or *italics*.  Figures must include captions with a short explanatory text at the bottom of the figure. Figures should not be larger than 4 inches. ONLY labs that meet these requirements will be accepted.

Lab reports must be uploaded to the D2L DROPBOX by 11am on the due date.
**Late labs will lose 10% per day late,** unless prior arrangements are made with the lab instructor. If you are unable to complete a lab during regular lab hours, there are extended computer access hours and there is an overflow lab (Harvill 454). Check the Open Lab schedule outside the SAL.

Lab Due Dates:

| Lab 1 | Tuesday, February 12, by 11am |
|-------|-------------------------------|
| Lab 2 | Tuesday, March 5, by 11am |
| Lab 3 | Tuesday, April 2, by 11am |
| Lab 4 | Tuesday, April 23, by 11am |

Exams
There are two exams. Exam 1 will take place on Thursday, February 28th.  Exam 2 will take place on Thursday, April 18th.  Each exam is worth 100 points. There is no final exam.

Final Project
You may work individually or in groups to complete the final project.  The final project will require that you locate, download, analyze, and produce maps of data based on a phenomenon in urban geography that interests you.  Specific instructions will be provided.

Final projects are due on Tuesday, April 30, 2013.  The final project is worth 100 points. Students will present their projects on Tuesday, April 30 and during the final exam time slot, Tuesday, May 7 (10:30am-12:30pm).

## COURSE SCHEDULE

*\*\*The List of Full Citations for the articles is located below the Course Schedule*
**Week 1: Course Intro/ Urban GIS Intro**
Thursday (1/10)

**Week 2: Urban Spatial Data Types & Sources**
Tuesday (1/15) - Lecture
Thursday (1/17) – (I'm away at a workshop – Please complete the GeoSkills Challenge)

**Week 3: US Census Data: Population/Migration/Urban Growth/Decrease**
Tuesday (1/22) – Lecture (GeoSkills Challenge DUE)
Thursday (1/24) – Lecture/Lab 1 (Day 1)
↪Reading: 1)Schlossberg 2003

**Week 4: Network Analysis & its Urban Applications**
Tuesday (1/29) – Lecture
Thursday (1/31) – Lecture/Lab 1 (Day 2)
↪Reading: 1)Zandbergen 2008;
          2)Sadeghi-Niaraki et al. 2011

**Week 5: Urban Transportation Systems/ Alternative Transportation Networks**
Tuesday (2/5) - Lecture
Thursday (2/7) – Lecture/ Lab 1 (Day 3)
↪Reading: 1) Arampatzis et al. 2004;
          2) Krizek & Johnson. 2006

**Week 6: Urban Public Health**
Tuesday (2/12) – Lecture (Lab 1 DUE)
Thursday (2/14) – Lecture/ Lab 2 (Day 1)
↪Reading: 1) Parenteau et al 2008;
          2) Rushton 2003

**Week 7: Environmental Justice/Environmental Hazards**

Tuesday (2/19) - Lecture
Thursday (2/21) – Lecture/ Lab 2 (Day 2)
↳Reading: 1) Su et al. 2011

**Week 8: Spatial Analysis**
Tuesday (2/26) – Lecture
Thursday (2/28) – **Exam 1**/ Lab 2 (Day 3)
↳Reading: 1) House-Peters et al. 2010

**Week 9: Urban Planning/Global Megacities**
Tuesday (3/5) – Lecture (LAB 2 DUE)
Thursday (3/7) – Lecture/ Lab 3 (Day 1)
↳Reading: 1) Barredo and Demicheli 2003

**Week 10 (SPRING BREAK):**
Tuesday (3/12) – No Class
Thursday (3/14) – No Class

**Week 11: Poverty/ Crime & Geo-Demographic Analysis**
Tuesday (3/19) - Lecture
Thursday (3/21) – Lecture/ Lab 3 (Day 2)
↳Reading: 1) Pain et al. 2006

**Week 12: Participatory/ Community-Engaged Urban GIS & Volunteered Geographic Info**
Tuesday (3/26) - Lecture
Thursday (3/28) – Lecture/ Lab 3 (Day 3)
↳Reading: 1) Elwood 2006
         2) Elwood 2008

**Week 13: Sustainable Urban Planning: Green Infrastructure**
Tuesday (4/2) – Lecture (LAB 3 DUE)
Thursday (4/4) – Lecture/ Lab 4 (Day 1)
↳Reading: 1) Landry and Chakraborty 2009

**Week 14: Urban Ecology/ Greenspace Conservation & Development/ Water Resources**
Tuesday (4/9) – Lecture
Thursday (4/11) – Lab 4 (Day 2) (I'm away at a conference, work on Lab 4 or Final Project)
↳Reading: 1) Syphard et al. 2011

**Week 15: Urban Digital Terrain Analysis**
Tuesday (4/16) - Lecture
Thursday (4/18) – **Exam 2**/ Lab 4 (Day 3)

**Week 16: Final Projects**
Tuesday (4/23) – Work on Projects (Lab 4 DUE)
Thursday (4/25) – Work on Projects

**Week 17: Student Presentations**
Tuesday (4/30) – Student Projects due; Student Project Presentations (Round 1)

Final Exam Time: Tuesday (5/7; 10:30am-12:30pm) – Student Project Presentations (Round 2)

## Full citations for required readings

1. Arampatzis, G., C.T. Kiranoudis, P. Scaloubacas, and D. Assimacopoulos. 2004. A GIS-based decision support system for planning urban transportation policies. *European Journal of Operational Research* 152: 465-475.
2. Barredo, J.I. and L. Demicheli. 2003. Urban sustainability in developing countries' megacities: Modeling and predicting future urban growth in Lagos. *Cities* 20(5): 297-310.
3. Elwood, S. 2006. Beyond cooptation or resistance: Urban spatial politics, community organizations, and GIS-based spatial narratives. *Annals of the Association of American Geographers* 96(2): 323-341.
4. Elwood, S. 2008. Volunteered geographic information: Future research directions motivated by critical, participatory and feminist GIS. *GeoJournal* 72: 173-183.
5. House-Peters, L., B. Pratt, and H. Chang. 2010. Effects of urban spatial structure, sociodemographics, and climate on residential water consumption in Hillsboro, Oregon. *Journal of the American Water Resources Association* 46(3): 461-472.
6. Krizek, K.J. and P.J. Johnson. 2006. Proximity to trails and retail: Effects on urban cycling and walking. *Journal of the American Planning Association* 72(1): 33-42.
7. Landry, S.M. and J. Chakraborty. 2009. Street trees and equity: Evaluating the spatial distribution of an urban amenity. *Environment and Planning A* 41: 2651-2670.
8. 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.
9. 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.
10. Rushton, G. 2003. Public health, GIS, and spatial analytic tools. *Annual Review of Public Health* 24: 43-56.
11. Sadeghi-Niaraki, Abolghasem, Masood Varshosaz, Kyehyun Kim, and Jason J. Jung. 2011. Real World Representation of a Road Network for Route Planning in GIS." *Expert Systems with Applications* 38 (10): 11999-12008.
12. Schlossberg, M. 2003. GIS, the US census and neighborhood scale analysis. *Planning Practice & Research* 18: 213-217.
13. 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.
14. Syphard, A.D., K.C. Clarke, J. Franklin, H.M. Regan, and M. Mcginnis. 2011. Forecasts of habitat loss and fragmentation due to urban growth are sensitive to source of input data. *Journal of Environmental Management* 92: 1882-1893.
15. Zandbergen, P. 2008. A comparison of address point, parcel and street geocoding techniques. *Computers, Environment and Urban Systems.* 32(2): 214–232

# COURSE POLICIES

**ACADEMIC MISCONDUCT:**
Academic misconduct is treated very seriously in this class. Academic misconduct is defined as any activity that is deemed as compromising the academic integrity of the institution, or otherwise subverts the educational process. Academic misconduct includes:
   (1) Violation of course rules as outlined by the course syllabus;
   (2) Providing or receiving of information during exams;
   (3) Submitting plagiarized work for an academic requirement; and/or,
   (4) Serving as, or enlisting the assistance of, a 'ringer' or substitute for a student in the taking of exams.
The perpetrator of any of action deemed as academic misconduct will be placed in front of the Dean of Student with the possibility of suspension or, even more likely, expulsion. For further information, students should refer to the University of Arizona's *Code of Academic Integrity*.

**ACCESS TO GRADES:**
University of Arizona policy mandates that the *instructor is not permitted to provide students' grades over the phone or via email*. You will have regular access to your grades on the D2L course website.

**BE HONEST! BE RESPONSIBLE! BE HELPFUL!**

**CLASSROOM BEHAVIOR**
Please, turn cell phones, smart phones, and pagers off *before* lab time. Emailing, chatting, facebooking or surfing the web will not be tolerated during lab time. Disrespectful or threatening behavior by students toward other students or instructor is unacceptable and is governed by University policies on such behavior.
(http://policy.web.arizona.edu/~policy/threaten.shtml).
It is our shared goal is to maintain a safe learning environment in which ideas are exchanged freely and without undue criticism.

**STUDENT HONESTY**
*Plagiarism is reprehensible and punishable.* According to the University of Arizona, "plagiarism is using others' ideas and words without clearly acknowledging the source of that information." In fact, the mere presence of any directly quoted or paraphrased text in your writing that is not properly referenced is considered plagiarism. This includes turning in any lab exercises downloaded from the internet, submitting lab exercises completed by another student in a previous semester, getting someone else to write your lab answers, or writing someone else's lab for them. All components of this course are to be completed with integrity. To ensure this integrity, *all your written work uploaded to the D2L dropboxes will be submitted automatically to TurnItIn.com, an online plagiarism prevention tool* used by the University of Arizona.

Each student is also expected to <u>refrain from any other form of cheating</u>.  Cheating during exams— including taking online exams with another student and/or sharing questions & answers with other students enrolled in this online class—is considered a serious offence and will thus be treated as such.

**Any case of possible plagiarism or cheating will result in a failing grade on that particular course component.**  In addition, <u>the instructor reserves the right to file an official complaint with the Dean of Students against the student(s) involved</u>.   If you need further clarification, you can consult <u>the University of Arizona's *Code of Academic Integrity*</u> for more information.

**THREATENING BEHAVIOR**
<u>Threatening behavior in the classroom is prohibited</u>.  Threatening behavior is defined by the University of Arizona as:

> Any statement, communication, conduct or gesture, including those in written form, directed toward any member of the University community that causes a reasonable apprehension of physical harm to a person or property.  A student can be guilty of threatening behavior even if the person who is the object of the threat does not observe or receive it, so long as a reasonable person would interpret the maker's statement, communication, conduct or gesture as a serious expression of intent to physically harm.

Any display of such behavior will be handled as stipulated by the <u>University of Arizona's Policy on Threatening Behavior by Students</u>.

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**SPECIAL PROVISIONS**

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**OBSERVED ABSENCES**
All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion.  A list of religious holidays recognized by the University of Arizona is included in the Calendar of Religious Holidays.
In addition to the holidays described above, absences pre-approved by the University of Arizona's Dean of Students (or Dean's designee) will be honored in this course.
In either situation, all evidence for such absences needs to be arranged in advance of (not after) the date that an absence is anticipated.


**STUDENTS WITH DISABILITIES:**
In compliance with Title III of the Americans with Disabilities Act (1990), students who require special assistance will be suitably accommodated.  If you anticipate the need for reasonable accommodations to meet the requirements of this course, you must register with the Disability Resource Center and request that the DRC send me official notification of your accommodation needs as soon as possible.  If you would like to discuss how the course's requirements and activities might impact your ability to fully engage with the material, please arrange for a virtual "appointment" by the end of the first week.  The

syllabus and other course materials, as they are distributed, are available in alternative formats upon request.

## SUBJECT TO CHANGE STATEMENT

Finally, information contained in the course syllabus, other than the grading policy, may be subject to change with advanced notice, as deemed appropriate by the instructor. Any changes the instructor makes to this syllabus will be posted to the announcements section of the course website.