Course title: USP 531: GIS for Planners (4 Credit Hours) CRN: 46138
Monday: Urban Center 220, 2:00 – 3:50PM (Lectures)
Wednesday: Neuberger Hall 450, 2:00 – 3:50PM (Lab Sessions)
Instructor: Dr. Yiping Fang
Tel: 503.725.8263 Email: yfang@pdx.edu
Office Hours & Location: Mon & Wed. 11:00am – 12:00PM, or by appointment.
Urban Center (URBN) 370U.
Lab sessions: Danell Norby, Time TBD
Urban Center (URBN) 225

Course Description and Objectives

Learning Objectives:
Geographic Information Systems for Planners (USP531) provides an overview of the use, application, and representation of geographic data in the field of urban and regional planning. The course is designed for students interested in the theoretical foundations, historical developments, and practical applications of spatial analysis. Combining assigned readings, lectures, GIS article sharing, lab exercises and assignments, this course aims to help students develop an in-depth understanding of the uses of geographic information systems in urban planning and its related field. The goals are to help students:

- Through readings, lectures, and student recent journal GIS related article presentations to
  - understand the theories in geographic information, and characteristics of spatial information;
  - grasp important concepts supporting spatial thinking and spatial analysis in the social science field;
  - be updated with the new development and application of GIS in planning and related field;
  - develop critical thinking skills to evaluate spatial analytical methods and representations of spatial data.

- Acquire technical and qualitative analytical skills in the use of GIS software and database management tools, investigate the GIS technologies as planning decision support tools, through:
  - lab exercises and assignments using local or online datasets and explore information in supporting decision making processes;
project work involving identifying, mixing and matching of data from different sources, collaborate with group members, and present effectively your findings.

The course teaches GIS techniques and basic database management at a level focusing on the thematic mapping and data manipulation skills. Students will focus on more open-ended community development questions that invite spatial analysis but will:

- Require judgment and exploration to select relevant data and mapping techniques.
- Involve mixing and matching new, local data with extracts from official records (such as census data, parcel data and regional employment and population forecasts).
- Utilize basic spatial analysis techniques.
- Raise questions about the skills, strategy, and organizational support needed to sustain such analytic capability within a variety of local and regional planning settings.

The course will provide the framework for meeting several learning objectives through in-class discussions, lab exercises and ‘take-home’ assignments and projects. Skills you will develop in this course include:

- Problem solving: Analytical capacities to integrate spatial data into the planning process;
- Research: Craft a study using spatial analysis to address one real local planning problem (Final project);
- Communication: A coherent, thoughtful presentation of analysis in written, graphical, and verbal formats;
- Group work: Develop interpersonal communication while working in teams; and
- Community engagement: Collaborate with planning institutions to address urban and regional planning issues.

**Required Materials**
Paul A. Longley, Michael F. Goodchild, David. J. Maguire, and David W. Rhind. 2010 *Geographic Information Systems and Science.* (3rd Ed.) New York: John Wiley and Sons,


**Recommended Readings**
The Basics

In general, the course will be divided into lecture and lab sessions. Mondays will consist of lecture, and Wednesdays will provide lab-time for hands-on use of software. There are a series of activities expected in this course including assigned readings, lectures, article reading & sharing, 5 minutes quiz, lab exercises & assignments and final group projects. The detailed arrangement of these activities are managed using a shared google documents named ‘course table’ which everyone can view. The following is a general introduction of each activity.

1. Assigned readings: The assigned readings are mainly fundamental knowledge about GIS. We will use the book by Longley et al. *Geographic Information Systems and Science*. This book helps to establish a holistic understanding of the key principles of GIS with critical theories and concepts in spatial thinking and analysis. All assigned readings are required and due before the Monday class. There are random 5 minutes quiz to check basics from your reading.

2. Lectures on each Monday provide an opportunity for students to learn about the theoretical foundations, historical developments, and applications of geographic analysis to urban and regional planning. It encourages a collaborative learning environment among the group.

3. Article reading & sharing is a collaborative effort to keep the whole class be updated with the recent GIS development or application in planning or related field. During the whole term, each student will search and find one recent article with its topic overlapping between GIS and his/her own interested theme. The article should be published within the past three years. Each student will have 10 minutes on Monday or Wednesday classes to present the articles you read to the whole class. You need to sign up on the shared google spreadsheet (‘course table’) to indicate the week for your article presentation. Other than the in-class presentation, you also need to introduce the article in brief in the D2L discussion forum named ‘GIS article sharing’ before the Monday’s class. The article introduction should include at least three points: 1. spatial questions addressed in the article; 2. how GIS is applied; 3. reflections on your own research and project interest. The whole class is strongly encouraged on commenting on the article either in class or on the discussion forum.

4. 5 minutes quiz is to keep everyone on the track of assigned reading. It also gives some practice questions for midterm exam. In total there will be five quiz, and it can happen either on Monday or Wednesday before the midterm. All quiz will be
conducted through the D2L website.

5. Lab exercise and assignments enable students to work directly with the software and address 'real-world' problems in urban and regional planning. Each student will follow the book GIS tutorial: Workbook 1 in the lab sessions. You have to go through the tutorial in the workbook to finish the assignments. Assignments will be given to you each Wednesday, and expected to be submitted by the beginning of the following Wednesday class. While you will have an opportunity to work on assignments during the lab sessions, in most cases you will be expected to complete the assignments using outside class hours. Some assignments are from the Workbook and some (Assignment B, C, D, E) are given on the D2L website. Please check the google spreadsheet ('course table') for the arrangement. The submission of the assignments are due in the D2L website dropbox. Data materials related to exercises and assignments are available in I drive (I:\Students\Data\GIS\GISTutorial\Maps). All GIS files submission in the D2L dropbox should be in the mpk format.

6. Midterm exam will test the major concepts you've learned in class, and also require that you apply what you've learned in the assignments. If you've come to class, paid attention, and done well on all the assignments you will have no trouble with the midterm exam. The midterm exam is designed to ensure that you are on track with the basic principles of GIS such that you will be prepared to complete the project and can stay on schedule for the remainder of the class. Midterm Exam will be on the six week of the class: Monday, February 13. It will be an in-class exam, with GIS principles and technical questions. It covers contents in the first five weeks, including lectures, assignments, readings and discussions.

7. Final group project will be a real world project that students will work in a team (2-3 members) on a real world GIS project titled, 'Mapping Buildable Land Areas in Small Cities in Mid-Willamette Valley Oregon'. The details of this project will be given in the seventh week, and staff from DLCD and Mid-Willamette Valley Council of Governments will come to class to explain the project. The final presentation will be conducted in one DLCD office.

The Gradings
To pass this course you will need to complete all assignments, lead a discussion on a peer-reviewed journal article, and pass the midterm exam and final project. All requirements are intended to complement one another – for example, while assignments use general datasets from pre-packaged sources, the skills you acquire will be essential to manage datasets used in your final project. This class is cumulative, assuming that the effort you put into completing all the assignments and exercises will be helpful in passing the midterm exam and completing the final project.
Assessment Criteria: You will be evaluated on a 200 point scale, divided into the following criteria:

- Assignments (10 points x 8): 80
- Midterm Exam: 40
- Leading GIS paper discussion: 5
- Quiz (5 points x 3): 15
- Course Participation: 10
- Final Project: 50
- TOTAL: 200

Late work will be automatically marked down, unless prior arrangements have been made with the instructor. Regular class attendance and participation is necessary and expected. Participation includes: involvement with class discussions (includes listening), asking substantive questions, addressing instructor's questions, working effectively in teams, and sharing relevant news and information.

**Computer/Software Access**

This course uses Environmental Systems Research Institute’s (ESRI) ArcGIS 10.0 spatial analysis software for assignments and final project. Computer labs in PSU campus should have all installed ArcGIS 10.0 for you to use. If you choose, you can receive a complementary copy of ArcGIS 10.0 (one-year expiration) to load onto your personal computer.

There are also a few ESRI product - Business and Community Analyst online, for which you need to first register an ESRI global account to use. The URL for creating an global account is here: [https://webaccounts.esri.com/cas/index.cfm?fuseaction=Registration.ShowForm&appId=CS6UL3ZAV9RK&CFID=34459244&CFTOKEN=68471250&lg=en](https://webaccounts.esri.com/cas/index.cfm?fuseaction=Registration.ShowForm&appId=CS6UL3ZAV9RK&CFID=34459244&CFTOKEN=68471250&lg=en).

The URL for activating your global account to use Business and Community Analyst online is here: [http://bao.esri.com/bao-subscription-services/group/all_edu_index.jsp?keycode=PSUP81412](http://bao.esri.com/bao-subscription-services/group/all_edu_index.jsp?keycode=PSUP81412)

Please be aware that these products may be used by students and faculty for instructional purposes and other student learning activities. They may not be used for commercial purposes. The licence to use these online tools will expire 12/27/2012.

**Web-Based Course Management**

Communication of this course are mainly through D2L, an online course management system used extensively at PSU. Course participants will need to use D2L for meeting several course requirements, including keeping up with updates of the class, submitting assignments, taking quiz, posting on discussion forum, and checking grades, etc..
If you are registered in this course, you will automatically have access to the course homepage. D2L website is located at: www.d2l.pdx.edu. To sign on to D2L you will need to use your PSU user identification number and password.

Moreover, there is a google group automatically set up including all registered students in this class linking to your PDX email address. Also emails can be sent within the D2L course website. Remember that you have to log in to this course website to access your D2L emails.

**Special need**

In terms of occasions that students can not participate class or labs, the instructor should be informed before it happens and try to try to find a way to make up the missing contents. Every effort will be made to accommodate individuals with disabilities. Please notify the instructor by the first week of the course so that any necessary accommodations can be arranged. More information can be found at: http://www.pdx.edu/iasc/drc_faculty_resources.html

**Academic Integrity**

Portland State University (PSU) takes academic integrity very seriously. PSU strives to provide students with the knowledge, skills, judgment, and wisdom they need to function in society as educated adults. To falsify or fabricate the results of one's research; to present the words, ideas, data, or work of another as one's own; or to cheat on an examination or project corrupts the essential process of higher education. Students failing to adhere to these principles of academic integrity will be penalized. For further information please refer to PSU’s student conduct code (http://www.pdx.edu/dos/conduct.html) or consult the instructor if you are unsure what constitutes a breech of academic integrity.

Syllabus Updated on January 7, 2013