Course title: GIS for Planners (4 Credit Hours)
Mondays: Urban Center 220  2:00 – 3:50PM   (Lectures)
Wednesdays: URBN 225  2:00 – 3:50PM   (Lab Sessions)
Instructor: Dr. Yiping Fang
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Office Hours & Location: by appointment.
Urban Center (URBN) 370U.

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**

Fang, Yiping; Shandas, Vivek; and Arriaga Cordero, Eugenio, "Spatial Thinking in Planning Practice: An Introduction to GIS" (2014). Open Access Textbooks. Book 4. [http://pdxscholar.library.pdx.edu/pdxopen/4](http://pdxscholar.library.pdx.edu/pdxopen/4)


**Recommended Readings**

- Paul A. Longley, Michael F. Goodchild, David. J. Maguire, and David W. Rhind.
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. A series of activities are expected in this course including assigned readings, lectures, article sharing, quiz, lab exercises & assignments and final group projects. The detailed arrangement of these activities are managed using a shared google spreadsheet 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. From this year, we will use the edited book at PDXOpen, "Spatial Thinking in Planning Practice: An Introduction to GIS". All assigned readings are required and due before the Monday class.

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 15 minutes on 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’ one day before your presentation. 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.

4. Two small quiz, one before and one after the mid-term, are to keep everyone on
the track of assigned reading. It also gives some practice questions for midterm exam. Both 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 A, B, C, D) 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:\Research\samba\gisdatal\Tutorials\GIS_Tutorial\For ArcGIS 10.1).

6. Midterm exam will test the major concepts you’ve learned in class. If you’ve come to class, paid attention, and done well on all the assignments you should not have 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 during the sixth week of the Monday class. It will be conducted as 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 (~3 members) on a real world GIS project assessing a planning question in Portland. The details of this project will be given later in the term. Detailed project description will be a separate document shared later.

**The Gradings**

To pass this course you will need to complete all assignments, present 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
- GIS article sharing: 10
- Quiz (5 points x 2): 10
- 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 10.4 spatial analysis software for assignments and final project. Computer labs in PSU campus should have all installed ArcGIS 10.4 for you to use. If you choose, you can receive a complimentary copy of ArcGIS 10.4 (one-year expiration) to load onto your personal computer.

For access of ArcGIS Online: [https://www.pdx.edu/gisinfo/arcgis-online](https://www.pdx.edu/gisinfo/arcgis-online)

For access to ArcGIS Pro: [http://www.pdx.edu/gisinfo/esri-arcgis-pro](http://www.pdx.edu/gisinfo/esri-arcgis-pro)

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.

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. I would encourage you to forward your d2l email to your regular email account, to avoid missing messages in general.

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.

ACADEMIC RESOURCES YOU SHOULD KNOW ABOUT:

Undergraduate Academic advising for students interested in or working toward a Community Development major or minor, minors in Real Estate and Urban Sustainable Development is provided by the Toulan School Student Services Coordinator Tracy Braden. If you wish to make an appointment please go to: tsuspadvising.youcanbook.me, send an email to tbraden@pdx.edu.

The Office of Diversity & Multicultural Student Services (DMSS) provides structured, academic support service, advising, referrals, and advocacy for first-generation college students, low-income and others facing special challenges. Their offices are located at Smith Center, Room 425

The Learning Center's mission is to foster the learning process by empowering PSU students to accomplish their academic and personal goals. In addition to helping with current coursework, academic support services can assist in developing effective
learning strategies. The Learning Center is located on the second floor of the University Library in the northwest corner, room 245.

Syllabus Updated on Mar. 28, 2019