Course Info:

USP 531: GIS for Planners’ (CRN 43925, 4 Credit Hours)
Monday: URBN 220, 2 – 3:50PM (Lectures)
Wednesday: Douglas Fir 6 (trailer), 2 – 3:50PM (Lab Sessions)

Instructor:
Vivek Shandas
Urban Studies and Planning
Email: vshandas@pdx.edu

Teaching and Lab Assistant (TA): TBD
Lab Hours for the TA (URBN 225): TBD

Office Hours & Location:
Wed, after class & by appointment
Urban Center (URBN) 370L

Course Description and Objectives
Geographic Information Systems (GIS) for Planners provides an overview of the use, application, and representation of geographic data specific to urban and regional planning. The course is designed for students interested in the theoretical foundations, historical developments, and practical applications of spatial analysis.

The course will provide the framework for meeting several learning objectives through in-class discussions, ‘take-home’ exercises, and participant presentations. First and foremost, you are expected to develop critical thinking skills to evaluate spatial analytical methods and representations of spatial data. As future planners, critically examining spatial data will be central to your ability to address challenges in urban and regional planning. Other skills you will develop in this course include:

- Problem solving: Analytical capacities to integrate spatial data into the planning process;
- Research design: Craft a study using spatial analysis to address one problem from the field of urban and regional planning;
- 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 community organizations to address an urban and regional planning issue.

In addition, and more pragmatically, students are expected to understand how spatial data differ from other types of data, what types of spatial data to use and when, what methods of analysis to apply and why, and how to represent results to urban and regional planners and other audiences.

* Working Syllabus: While the learning objectives and core requirements will not change over the term, there may be minor modifications to assignments, order of presentations, and timing of topics. Modifications will be described in class and students are required to be up-to-date on any changes. Last change: January 7th, 2019.
Required Readings and Materials


III. Electronic storage device (e.g. memory card, flash drive) adaptable to a USB port and a minimum storage capacity of 1 gigabyte.

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. Lectures will generally begin with a warm-up exercise. Warm-up exercises are intended to stimulate thinking about a specific topic, and develop critical thinking skills. Lectures provide an opportunity for students to learn about the theoretical foundations, historical developments, and applications of geographic analysis to urban and regional planning. Lab sessions enable students to work directly with the software and address 'real-world' problems in urban and regional planning. A basic understanding of Windows® operating system, including Microsoft Word and Excel, will be helpful in working with the datasets used in this course. While you will have an opportunity to work on assignments during the lab sessions, in most cases you will be expected to complete homework (e.g. assignments and presentation) outside class hours.

This course uses ESRI's ArcGIS 10.x spatial analysis software for assignments, and possibly, the final project. If you choose, you can receive a complementary copy of ArcGIS 10.x (one-year expiration) to load onto your personal computer. You also have access to all the computer labs on campus, all of which have the most recent version of ArcGIS installed. Please make sure to abide by all the rules and regulations of campus computing labs – misusing equipment, software, or data will result in loss of privileges.

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

¹ Available at the PSU bookstore --, previous editions of GIS Tutorial exist, although for this course we will be using the *Workbook for ArcGIS 10.3.x.*
Evaluation Criteria
You will be evaluated on a 1000 point scale, divided into the following criteria:

- **Assignments (400 points):** 40%
- **Midterm Exam (200 points):** 20%
- **Leading Discussion (100 points):** 10%
- **Course Participation (100 points):** 10%
- **Final Project (200 points):** 20%

**TOTAL (1000 POINTS)** 100%

Assignments, Midterm, and Project
To pass this course you will need to complete all assignments, lead a discussion 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.

**ASSIGNMENTS:** The instructor will provide a background to the assignment in lab session, and participants are expected to submit assigned work by the beginning of the following Wednesday class (one week). The attached ‘Course Outline’ table provides a brief description of and due-dates for assignments, midterm exam and final project. To submit the assignments please take a ‘screen capture’ (Cntl+Alt+Print Screen) of the final map produced and paste onto a MS Word document. Submit these assignments as in PDF format. *Note that pasting the final product onto an MS Word document is different than the instructions provided in the workbook.* Be sure to clearly identify which portion of the assignment you are submitting.

**MIDTERM:** The midterm exam and final project will cover all the major concepts you’ve learned in class, and 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. Some details on the midterm:

**Midterm Exam – Monday, February 11**
- Covers the first five weeks, including lectures, assignments, readings and discussions -- a brief review of the midterm will occur one week prior;
- This will be an in-class exam, with short-answers and technical questions.
FINAL PROJECT: One of the largest parts of the course is an expectation to work in a team (2 - 4 members) to: (1) identify an urban & regional planning problem requiring spatial analysis; (2) collaborate with your team members to develop a research question; (3) conduct analysis to address the research question; (4) present your project; and (5) submit a final report detailing your analysis, and findings. Consider working with a regional organization that could benefit from spatial analysis, and apply your GIS techniques to the needs of an organization.

Completion dates and description for the final project are provided below. While the instructor will provide feedback on project elements, these submissions will not be graded, and each group is responsible for communicating their ideas with the instructor as needed. The purpose of these submissions is to ensure that you are on-track with completing the final project.

- **Project Idea – January 9 through 23**
  - No more than one page
  - Brief background
  - State the core research question
- **Initial Data Acquisition – February 4**
  - List Data Sources, and for each, state the following:
    - How data tie to your research question;
    - What is the source of the data;
    - How the data are measured; and
  - Also discuss any missing or problem data sources you have.
- **Project Design & Methodology – February 18**
  - A flowchart identifying data sources and analysis at all steps.
  - A short narrative (~half-page) describing how your methodology accomplishes your objective.
- **Data Analysis – February 25**
  - Finish your data analysis by this point.
  - Check-in with Instructor about findings and report structure
- **Conclusions – March 5**
  - Develop conclusions for your project and revisit any changes necessary.
- **Presentation – March 13 (regular class time)**
  - 12 minutes per presentation (+ 2min. questions/comments)
  - Focus on the following elements of your project:
    - Background/Research Question; Data/Methodology; Summary of Results; Interpretation of Results; Limitations of analysis
  - Final project presentations will be evaluated on content (40%), organization (40%), and effective communication (20%).
- **Final Report – March 20 (by 5PM, submitted on D2L)**
  - In terms of length, reports should be no more than 20 pages (double-spaced, 12-point font, including figures, and not bibliography or appendices).
**Web-Based Course Management**

We will be using 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 to the syllabus, downloading readings, and uploading assignments. D2L also has a forum on which participants can post course-related messages. D2L is located at: www.psuonline.pdx.edu. To sign on to Blackboard you will need a PSU user identification and password.

**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 breach of academic integrity.

**Title IX Reporting Obligations**

As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. Please be aware that federal, state, and PSU policies require faculty members to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. Similarly, PSU faculty are required to file a report if they have reasonable cause to believe that a child with whom they come into contact has suffered abuse, or that any person with whom they come into contact has abused a child. If you would rather share information about these experiences with an employee who does not have these reporting responsibilities and can keep the information confidential, please contact one of the following campus resources:

- Women’s Resource Center (503-725-5672)
- Queer Resource Center (503-725-9742)
- Center for Student Health and Counseling (SHAC): 1880 SW 6th Ave, (503) 725-2800
- Student Legal Services: 1825 SW Broadway, (SMSU) M343, (503) 725-4556

For more information about the applicable regulations please complete the required student module *Creating a Safe Campus* in your D2L.
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<td>Course overview, GIS defined, software systems, data models</td>
<td>Jan 7 &amp; 9</td>
<td>Tutorial 1 &amp; 2 (Introduction &amp; Map Design)</td>
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**Final Project Presentations:**
- March 20
- March 22

**Final Reports Due:**
- March 30
- April 2

**Final Reports:**
- SPH on D2L

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**Module Objectives:**
- Module 1: Learn principles of geographic analysis; Work directly with software; Consider applications to urban & regional planning.
- Module 2: Learn to evaluate quality of spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 3: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 4: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 5: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 6: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 7: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 8: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 9: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 10: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 11: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.
- Module 12: Create and manipulate spatial data; Understand spatial analysis techniques; Work with real world data; Application.

**Monday Lecture Dates:**
- Jan 7 & 9
- Jan 14 & 16
- Jan 21 & 23
- Feb 4 & 6
- Feb 11 & 13
- Feb 18 & 20
- Feb 25 & 27
- Mar 1 & 4
- Mar 8 & 11
- Mar 15 & 18
- Mar 22 & 25

**Due on Monday Dates:**
- Assignment 1: (GIS Output, 2-2)
- Assignment 2: (GIS Output, 4-1, 4-2)
- Assignment 3: (Special Analysis & Geodatabases, 6-1, 6-2)
- Assignment 4: (Spatial Data & Digitalizing, 7-1, 7-2)
- Assignment 5: (Spatial Analysis, 8-1, 8-2)
- Assignment 6: (Special Analysis & Geodatabases, 9-1, 9-2)
- Assignment 7: (GIS Outputs, 10-1, 10-2)
- Assignment 8: (GIS Outputs, 11-1, 11-2)
- Assignment 9: (GIS Outputs, 12-1, 12-2)

**Due on Wednesday Dates:**
- Tutorial 1 & 2 (Introduction & Map Design)
- Tutorial 3 & 4 (GIS Outputs, Geodatabases)
- Tutorial 5 & 6 (GIS Outputs, Geodatabases)
- Tutorial 7 & 8 (GIS Outputs, Geodatabases)
- Tutorial 9 (GIS Outputs & Geodatabases)
- Tutorial 10 (GIS Outputs & Geodatabases)
- Tutorial 11 (GIS Outputs & Geodatabases)

**Wednesday Lab Dates:**
- Media Article using Maps
- Assignment 1 (GIS Output, 2-2)
- Assignment 2 (GIS Output, 4-1, 4-2)
- Assignment 3 (Special Analysis & Geodatabases, 6-1, 6-2)
- Assignment 4 (Spatial Data & Digitalizing, 7-1, 7-2)
- Assignment 5 (Spatial Analysis, 8-1, 8-2)
- Assignment 6 (Special Analysis & Geodatabases, 9-1, 9-2)
- Assignment 7 (GIS Outputs, 10-1, 10-2)
- Assignment 8 (GIS Outputs, 11-1, 11-2)
- Assignment 9 (GIS Outputs, 12-1, 12-2)

**Final Reports Due Dates:**
- March 30
- April 2

**Final Reports Submission:**
- SPH on D2L