

SAN JOSÉ STATE UNIVERSITY
URBAN AND REGIONAL PLANNING DEPARTMENT
URBP 275G – GEOGRAPHIC INFORMATION SYSTEMS OVERVIEW
SPRING 2020

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| Instructor: | Rick Kos, AICP |
| Office location: | WSQ-218C |
| Telephone: | (408) 924-5854 (office phone, but email is a much better way to reach me) |
| Email: | Richard.Kos@sjsu.edu |
| Office hours: | Wednesdays (11:00 a.m. – 1:00 p.m.) and Thursdays (2:00 p.m. – 4:00 p.m.) Appointments strongly preferred. Sign up here: https://goo.gl/pEvVod |
| Class days/time: | Five Tuesdays 4:30–7:00 p.m.: Jan. 28; Feb. 4, 11 (skip Feb. 18), 25; Mar. 3 |
| Classroom: | Washington Square Hall (WSQ) Room 208 |
| Class website: | All course materials will be available on Canvas |
| Prerequisites: | None |
| Units: | 1 |

Course Catalog Description

An overview of Geographic Information Systems with a focus on applications to urban planning, including demographic data analysis, land use mapping, cartographic techniques and methods for determining the most appropriate display of quantitative data for a variety of intended audiences.

Course Description and Course Learning Objectives

This course provides a broad overview of key principles of GIS and will allow students to begin applying the technology to urban planning analyses. Through a combination of short lectures, demonstrations by the instructor, and plenty of hands-on time using (1) Esri’s GeoPlanner web mapping application, (2) Esri’s Story Maps interactive mapping platform, (3) ArcGIS Online, (4) ArcGIS Pro 2.3, and (4) ArcGIS Desktop 10.6.1, we will broadly explore the field of geospatial analysis and related terminology. Students will be encouraged to build on the topics covered in this course by enrolling in URBP-278 (Intro. to GIS) and URBP-279 (Advanced GIS) in the future.

Since this is a one-unit course, we will meet five times during the semester. Meeting dates are listed in the table above as well as the class schedule on the last page.

Upon successful completion of the course, students will be able to:

1. Describe the design principles that make for clear, accurate, and compelling maps and apply these principles to critique existing maps.
2. Describe how urban planners typically use GIS to analyze and display quantitative data.
3. Use web-based GIS tools to analyze spatial data and produce maps.

Planning Accreditation Board (PAB) Knowledge Components

This course partially covers PAB Knowledge Components 2a and 2b. A complete list of the PAB Knowledge Components can be found at www.sjsu.edu/urbanplanning/courses/pabknowledge.html.

Required Course Readings

Harder, Christian, *The ArcGIS Book: 10 Big Ideas About Applying The Science of Where*, 2nd edition. Redlands, CA: Esri Press, 2017.

- Download the interactive PDF version of this free book from Canvas.
- You do **not** need to purchase the book.

Peterson, Gretchen N., *GIS Cartography: A Guide to Effective Map Design (Second Edition)*. Boca Raton, FL: CRC Press, 2014.

- Was available as a free e-book from the SJSU library (out of print, but still a great book!) The chapters have been downloaded and you can access them from the course Canvas site.

Additional short, no-cost, online readings are likely to be assigned during the course; announcements will be made in class.

Course Requirements and Assignments

Your grade for the course will be based on the following assignments and other activities:

| Assignments | Due Date | Course Learning Objective(s) Covered | Percent of Course Grade |
|--|----------|--------------------------------------|-------------------------|
| 1 – Urban Sustainability Analysis using ArcGIS Online | Feb. 11 | 2 and 3 | 30% |
| 2 – Portfolio of Substandard and “Best Practice” Cartography | Feb. 25 | 1 and 2 | 30% |
| 3 – Create an Esri Story Map of an Urban Neighborhood | Mar. 03 | 3 | 30% |
| Participation – Consistent and active engagement in lectures and discussions, small team tasks, completion of 5 in-class exercises. | | | 10% |

Assignment 1 is a guided exercise related to urban sustainability that will require students to use a browser-based mapping tool: ArcGIS Online. Specifically, students will undertake a comparative analysis of neighborhood-level urban sustainability indicators (e.g. income distribution, racial diversity, access to food stores, health care access). Prior to the mapping work, students will watch a series of videos to explore urban sustainability and write responses and reactions to these videos.

Assignment 2 will have students gather a portfolio of two maps that represent "substandard" map design as well as two maps that represent "best practice" in map design. Students will draw heavily upon the assigned text, *GIS Cartography: A Guide to Effective Map Design*. To demonstrate both substandard and best practice qualities, students will critique each of the four published maps and include a brief (~3 paragraphs) description of what makes the designs substandard or well-made. I will grade the portfolio based on the quality of student critiques, direct linkages to the assigned reading, the overall readability of the gathered maps, and how well the student articulated the elements of substandard/"best practice"—layout, font, color, and features. Standard style and referencing requirements apply (see "citation style" section of this syllabus).

Assignment 3 will have students complete a personalized Esri Story Map as a way to practice visual/graphic communication skills for highlighting characteristics of a Bay Area urban neighborhood. Specific deliverables will be listed in the assignment handout.

Calculation of Final Course Letter Grade

I will calculate the final letter grade for the course by weighting the grade for each assignment according to the percentages in the table above. To do this, I first convert the letter grade for each assignment to a number using a 4-point scale (A+ = 4.2, A = 4.0, A- = 3.67, B+ = 3.33, B = 3.0, B- = 2.67, C+ = 2.33, C = 2.0, C- = 1.67, D = 1, and F = 0).

I then use these numbers and the weights for each assignment to calculate a final, numerical grade for the course based on a 4-point scale. That number is converted back to a letter grade (A = 3.85+, A- = 3.50 – 3.84, B+ = 3.17 – 3.49, B = 2.85 – 3.16, B- = 2.50 – 2.84, C+ = 2.17 – 2.49, C = 1.85 – 2.16, C- = 1.41 – 1.84, D+ = 1.17 – 1.40, D = 0.85 – 1.16, F = 0 – 0.84).

Fundamentals for Success in this Course

I will make every effort to help you succeed in this course so that you develop a clear understanding of GIS applications to our profession. Naturally, it is your responsibility to complete all assignments and to take advantage of the many learning opportunities this semester. Your final grade will reflect your overall commitment to learning; highest grades correlate with student efforts that exceed expectations. Here are some tips to help you succeed this semester:

Maintain a fast pace: This will be a fast-moving and somewhat technologically advanced course, but concepts and instructions will be explained as clearly as possible. If you wish to evaluate your readiness for this course at the outset, please see me as soon as possible.

Computer competencies: Competence with the Windows operating system is expected, including managing multiple windows and applications; and techniques for saving work frequently.

Enjoyment of Learning: A strong motivation to learn, explore and have fun with computer applications is essential. This course will require a significant amount of independent work and relies heavily on student initiative. A sense of humor with computer "headaches" is helpful, too!

Seek Help Effectively: Since urban planners are problem-solvers at their core, it is important that you adopt a problem-solving mindset in this course. Asking for assistance this semester is encouraged and signals to me that you are engaged in your work, motivated by excellence and positively challenged by the assignments. Asking for help will never be perceived as a liability in my class. However, when seeking assistance, it is important for you to (1) clearly communicate the problem and (2) demonstrate that you have attempted to solve the problem on your own and are ready to clearly articulate your attempts.

Also, I am very happy to help you with your work outside of the classroom during office hours or via email. If we work together via email, it is vital that you send me as much information as possible

to help diagnose the problem. It is not sufficient to write to me and vaguely state, “I can’t get this to work” and expect useful assistance without also including relevant screen captures and a description of the solution steps you’ve tried. In general, I will be very responsive to queries that meet these criteria and much less so for “lazy queries”, which I probably won’t prioritize. This approach mirrors professional practice since supervisors expect valued employees to be proactive in solving problems.

Focus and Respect: I fully understand the temptations and distractions we all face today with smartphones vying for our attention. Please turn off or mute your phone during class, and note that lab computers may only be used for class exercises during the class period. If you have to "get something else done" during the class period, please step outside and do it elsewhere.

Professional Conduct: I conduct this course in a manner that mirrors professional practice in order to help you develop valuable workplace skills. We all need to be in agreement that the following standards will apply, as listed in the two sections below:

Instructor Responsibilities

- To create a physically and intellectually safe and stimulating environment for learning
- To assist students as much as possible with their individual and collective learning goals
- To help resolve conflicts that hinder learning by answering student questions clearly and promptly, or to research answers and reply to the student as soon as possible
- To treat students with respect and kindness, using encouragement and humor to foster learning
- To arrive at the start of each class session fully prepared and organized, with clear learning objectives and a schedule for the day’s tasks ready to go
- To evaluate and grade student work fairly and accurately while providing constructive feedback

Student Responsibilities

- To attend each class session and to arrive punctually, bringing all needed materials
- To treat other students and the instructor with absolute respect, supporting fellow students whenever possible with their learning objectives, and minimizing distractions in class
- To complete all assignments on time and professionally according to the requirements listed in this syllabus
- To fully read and understand all aspects of this syllabus and to carry out the requirements herein
- To actively and consistently participate in class discussions and question-and-answer sessions
- To demonstrate self-reliance and self-direction in setting and completing learning objectives
- To accept responsibility for working collaboratively in the learning process

Completing Assignments on Time and Professionally

Assignments are due at the date and time specified on each assignment handout. In only rare instances will late assignments be accepted, as described below. Late assignments will receive a one-letter grade deduction for each day an assignment is late. For example, if the assignment would normally receive a grade of “B” but is submitted one day late, it will receive a final grade of “C”.

I realize that life happens. If you expect not to be able to complete an assignment on time, it is important for you to do two things:

1. Contact me **at least 24 hours prior to the due date**. If you do not communicate an anticipated late assignment within this timeframe, the standards above will apply.

2. Provide a date and time by which the late assignment will be submitted. If the late assignment is not received on the date promised, the assignment will receive a grade of zero.

A maximum of one late assignment that adheres to the above policies will be accepted; all subsequent late assignments will receive an automatic grade of zero. Sorry, no exceptions to these policies will be granted, in fairness to the majority of students who submit their assignments on time.

Since this course focuses on the development of professional skills used by urban planners, the presentation of submitted materials will be considered as part of the assignment's grade. All assignments must include a cover page with the student's name, date, course number, assignment number, and other items as directed by the instructor. **Neatness, clear organization, and professional presentation of assignments will influence your grade.** Assignments not meeting these fundamental practices of professional presentation will generally receive a one-half to one-point reduction in the grade.

Final Examination or Evaluation

There is no final examination for this one-unit course.

Course Workload

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Because this is a one-unit class over five weeks, you can expect to spend a minimum of 45 hours (5 weeks * 9 hours per week) in addition to time spent in class and on scheduled tutorials or activities. Special projects or assignments may require additional work for the course. Careful time management will help you keep up with readings and assignments and enable you to be successful in all of your courses.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

Plagiarism and Citing Sources Properly

Plagiarism is the use of someone else's language, images, data, or ideas without proper attribution. It is a very serious offense both in the university and in your professional work. In essence, plagiarism is both theft and lying: you have stolen someone else's ideas, and then lied by implying that they are your own.

Plagiarism will lead to grade penalties and a record filed with the Office of Student Conduct and Ethical Development. In severe cases, students may also fail the course or even be expelled from the university.

If you are unsure what constitutes plagiarism, it is your responsibility to make sure you clarify the issues before you hand in draft or final work.

Learning when to cite a source and when not to is an art, not a science. However, here are some common examples of plagiarism that you should be careful to avoid:

- Using a sentence (or even a part of a sentence) that someone else wrote without identifying the language as a quote by putting the text in quote marks and referencing the source.
- Paraphrasing somebody else's theory or idea without referencing the source.
- Using a picture or table from a webpage or book without reference the source.
- Using data some other person or organization has collected without referencing the source.

The SJSU MLK Library provides a short (15 minutes) and informative plagiarism tutorial. The MUP faculty highly encourage all students to complete it. Details are here:

<https://libguides.sjsu.edu/c.php?g=853661&p=6111789>

Also, the University of Indiana has developed a very helpful website with concrete examples about proper paraphrasing and quotation. See in particular the following pages:

- Overview of plagiarism at www.indiana.edu/~istd/overview.html
- Examples of plagiarism at www.indiana.edu/~istd/examples.html
- Plagiarism quiz at www.indiana.edu/~istd/test.html

If you still have questions, feel free to talk to me personally. There is nothing wrong with asking for help, whereas even unintentional plagiarism is a serious offense.

Citation style

It is important to properly cite any references you use in your assignments. The Department of Urban and Regional Planning uses Kate Turabian's *A Manual for Writers of Research Papers, Theses, and Dissertations*, 8th edition (University of Chicago Press, 2013, ISBN 780226816388). Copies are available in the SJSU King Library. Additionally, the book is relatively inexpensive, and you may wish to purchase a copy. Please note that Turabian's book describes two systems for referencing materials: (1) "notes" (footnotes or endnotes), plus a corresponding bibliography, and (2) in-text parenthetical references, plus a corresponding reference list. In this class, students should use the "notes" style of referencing.

Library Liaison

The SJSU Library Liaison for the Urban and Regional Planning Department is Ms. Peggy Cabrera. If you have questions, you can contact her at peggy.cabrera@sjsu.edu or 408-808-2034.

A Little About Me...

My formal training is in environmental planning and urban design (B.S., Rutgers University, 1985) as well as regional planning and New Urbanism (Masters, University of North Carolina at Chapel Hill, 1993). In the late 1980s, I worked as an assistant planner in Middlesex County, NJ, reviewing subdivision and site plan proposals for compliance with county regulations. In the 1990s, I served two rapidly-growing North Carolina municipalities in a dual role as town planner and GIS coordinator (the latter being a role I created for both towns), so I am equally conversant in the language of both disciplines. From 1996 - 2000, I served as Senior Town Planner for Huntersville, North Carolina - the fastest-growing town of its size in the state at the time. The New Urbanist principles mandated by the Town's development regulations applied to both greenfield and infill sites. Since the regulations were design-based (i.e., non-Euclidean), they required me to make

frequent subjective judgments on the visual qualities of streets, the orientation of proposed buildings to public spaces, and the relationship of buildings and land uses to one another

After relocating to the Bay Area in 2000, I worked with the Metropolitan Transportation Commission as a GIS Planner/Analyst. The Bay Area Lifeline Transportation Map that I completed for MTC locates disadvantaged neighborhoods and thousands of geocoded essential destinations (e.g., grocery stores, daycare centers, clinics) within the 9-County region, along with existing public transit services. The spatial analyses enabled by this mapping work allowed transportation planners to locate gaps in transit service so that decision-makers could direct funding to alter bus schedules, connections and routing for improved neighborhood connectivity.

From 2003 to 2007 I served as GIS Manager for Design, Community & Environment, a 45-person planning and design firm in Berkeley. I managed all aspects of the firm's GIS practice and took great pride in keeping hundreds of data layers organized across multiple projects, ensuring that the firm's metadata was up-to-date, training staff to use ArcGIS and ArcCatalog, and managing the production of hundreds of maps for General Plans and EIRs throughout California.

I have co-authored a book titled *GIS for Economic Development* with Professor Mike Pogodzinski of the SJSU Economics Department. The book was published in late 2012 by Esri Press. I also have a small consulting practice where I engage in GIS projects for a variety of Bay Area clients.

URBP-275G: GEOGRAPHIC INFORMATION SYSTEMS OVERVIEW

SPRING 2020 COURSE SCHEDULE*

| Date | Class Discussions and Exercises | Readings Due | Assignments Due |
|------------------|--|--|--|
| Tues. Jan. 28 | <ul style="list-style-type: none"> - Course overview; how GIS is used by urban planners - Video about a geospatial topic - Introduction to ArcGIS Online - Exercise 1A: demographic analysis - Exercise 1B: site suitability analysis | None | None |
| Tues. Feb. 04 | <ul style="list-style-type: none"> - Video about a geospatial topic - Discussion: Data Visualization and the Geodesign Process - Exercise 2: Using Esri GeoPlanner to identify affordable housing sites in San Francisco | <p>Peterson, Chapters 1-2</p> <p>The ArcGIS Book*</p> <ul style="list-style-type: none"> - Read pages v. to 14 - Visit all web-linked material in the chapter. - Readings on GeoPlanner and geodesign (on Canvas) | None |
| Tues. Feb. 11 | <ul style="list-style-type: none"> - Video about a geospatial topic - Discuss Assignment 1 findings - Discussion: Professional Map Design; Urban Sustainability - Exercise 3: Cartographic Design with ArcGIS Pro | <p>Peterson, Chapters 3-5</p> <p>The ArcGIS Book*</p> <ul style="list-style-type: none"> - Read Chap. 2 (pgs. 19-35) - Visit all web-linked material in the chapter. - Skip page 36. | 1 – Urban Sustainability Analysis with Esri ArcGIS Online |
| Tues. Feb. 18 | No class meeting | | |
| Tues. Feb. 25 | <ul style="list-style-type: none"> - Video about a geospatial topic - Discuss Assignment 2 findings - Exercise 4: Evaluate Locations for Mixed-Use Development - Overview: Esri Story Maps | <p>Peterson, Chapters 6-7</p> <p>The ArcGIS Book*</p> <ul style="list-style-type: none"> - Read Chap. 3 (pgs. 39-47) - Visit all web-linked material in the chapter. - Skip page 48. | 2 – Portfolio of Substandard and “Best Practice” Map Designs |
| Tues. Mar. 03 | <ul style="list-style-type: none"> - Discuss Assignment 3 findings - Exercise 5: Producing professional demographic maps using ArcGIS 10.6.1 desktop - Overview of URBP-278 (Intro. GIS) and URBP-279 (Advanced GIS) | None | 3 – Creating an Esri Story Map |

* This schedule is subject to change with fair notice in class or by email.

** Download a PDF of the course textbook from Canvas.