

Geographic Information Systems Overview: Urban Planning Applications Section 80

URBP 275G

Spring 2025 Fully Online 1 Unit(s) 01/23/2025 to 05/12/2025 Modified 01/18/2025

Contact Information

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Office Hours

Zoom Office Hours

Use this [link \(https://calendar.google.com/calendar/u/0/appointments/schedules/AcZssZ2g-gUbsMZ4N2F5jpkG1GXPUax1SUMWp45KhJkzXA7Ei7O5CsrD-13Emrsw0Jv8UXvSAuuBI7ls\)](https://calendar.google.com/calendar/u/0/appointments/schedules/AcZssZ2g-gUbsMZ4N2F5jpkG1GXPUax1SUMWp45KhJkzXA7Ei7O5CsrD-13Emrsw0Jv8UXvSAuuBI7ls) to schedule office hours (Mondays 6:00 PM - 7:00 PM and Thursdays 12:30 PM - 1:30 PM). If these times don't work for you schedule [email me \(mailto:%20judiheher@sjsu.edu\)](mailto:%20judiheher@sjsu.edu) and set up a separate meeting.

Course Information

This course provides a broad overview of key principles of GIS and will allow you to begin applying the technology to the type of urban planning analyses used by professional planners with GIS skills. You will work with several browser-based mapping tools such as the ArcGIS Online Map Viewer, Survey123, and Esri's Community Analyst (soon to be Business Analyst).

You'll explore a variety of topics including common uses of GIS technology in the field of urban planning, a review of professional map design principles, and several exercises using Esri's ArcGIS Online platform. These exercises will include collecting data in a neighborhood of your choice using the Survey123 smartphone app and utilizing Esri's Community Analyst (soon to be Business Analyst) webapp for mapping Census demographic data at a neighborhood scale.

At the end of the course, you'll be encouraged to expand your GIS skills by enrolling in URBP-278 (Intro. to GIS for Urban Planning) and URBP-279 (Advanced GIS) in future semesters.

Course Description and Requisites

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.

Letter Graded

* Classroom Protocols

Fundamentals for Success in this Course

I am here to help you succeed in this course so that you develop a clear understanding of GIS applications in the urban planning 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; high grades correlate with student efforts that exceed minimum course requirements. Here are some tips to help you succeed this semester:

Maintain a solid pace: This is a 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 or Mac operating systems 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 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 this 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. I am very happy to help you with your work outside of class meetings, 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.

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 provide clear learning objectives and structure for each lesson and assignment
- To evaluate and grade student work fairly and accurately while providing constructive feedback

Student Responsibilities

- To treat other students and the instructor with absolute respect, supporting fellow students whenever possible with their learning objectives
- 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 demonstrate self-reliance and self-direction in setting and completing learning objectives

Completing Assignments on Time and Professionally

Students will be expected to submit assignments on (or before) the dates listed in this syllabus and on Canvas. In fairness to students who submit their work on time, **late work will receive a deduction of 5% of the total grade for each day it is tardy.** 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 the student's name, date, course number, assignment number and other items as directed by the instructor. Neatness, clarity, and organization will influence your 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 one 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, you can expect to spend a minimum of 45 hours (15 weeks * 3 hours per week) on course lessons and assignments. Careful time management will help you keep up with readings and assignments and enable you to be successful in all of your courses.

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 (20 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> (<https://libguides.sjsu.edu/c.php?g=853661&p=6111789>) If you still have questions, feel free to talk to me. 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, 9th edition (University of Chicago Press, 2018). 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, San José State University Urban and Regional Planning Department page 7 of 9 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. Lauren DeCelle. If you have questions, you can contact her at lauren.decelle@sjsu.edu. (<mailto:lauren.decelle@sjsu.edu>)

Meet Your Instructor: Judi Heher

My formal training runs from mathematics and computer science (BMath, University of Waterloo in 1986), education (MA Interdisciplinary Education, Santa Clara University in 2013) and geography and urban planning (MA Geography and MUP, San José State University in 2024). I started my career as a software engineer writing programs that were run on the space shuttles and contributed to version 1.0 of the Java programming language.

In the early 2000s I changed careers and started teaching high school math and computer science. My favorite endeavors during this time were establishing a computer science honors society at one school, advising a Girls Who Code at another school, and developing introductory computer science courses at all of the school in which I taught.

The late 2010s brought on a another career change. I determined I needed more flexibility in my work life and started a GIS consultancy. In an effort to "up my cred" I enrolled in the GIS certificate program and SJSU, fell back in love with high education, and continued on to earn my MA in Geography and my MUP. The support and encouragement I received during my studies here at SJSU have inspired me to return to the classroom (albeit asynchronously) and to do research. My current research includes:

- a geospatial study of the effectiveness of California's Voters Choice Act
- a geospatial study of housing availability for teachers in Santa Clara County
- a chapter on geospatial studies and democracy soon to be published by Sage.

I hope to add research into using GIS education as an interdisciplinary bridge soon.

Outside of school, I am an active member of BayGeo, the Bay Area's geospatial networking and training organization. I hope to see you at a GeoBeers event! I'm also the Vice President of the Friends of the Scotts Valley Public Library and I have two grandchildren who keep me grounded and are the joy of my days.

Program Information

MUP Program Learning Outcomes

Students will:

- 1) Conceptualize planning problems from complex, real-world situations so that the problems are meaningful to clients, and are research-worthy; Frame research questions and hypotheses; and design appropriate methodologies to answer research questions;
- 2) Communicate effectively: in writing, by expressing concepts in visual terms, and through public speaking;
- 3) Work effectively as team members and leaders of planning teams, and to apply an understanding of interpersonal and group dynamics to assure effective group action;
- 4) Analyze and synthesize planning knowledge and apply it to address actual planning problems; and,
- 5) Develop planning strategies to advance community priorities through collaborative engagement with stakeholders, and do so in a manner that deliberately incorporates multicultural and historical perspectives

Course Goals

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 <https://sjsu.edu/urbanplanning/graduateprograms/masters-in-urban-planning/pab-knowledge.php>.
(<https://sjsu.edu/urbanplanning/graduateprograms/masters-in-urban-planning/pab-knowledge.php>).
(<https://sjsu.edu/urbanplanning/graduateprograms/masters-in-urban-planning/pab-knowledge.php>).

Course Learning Outcomes (CLOs)

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.

Course Materials

Required Course Readings

See the list below for required readings. All are free on the web, or can be accessed through the MLK library.

Recommended Course Readings

See Canvas for a number of readings on a variety of topics including geodesign, open-source GIS platforms, and techniques for designing professional-looking maps.

Make Maps People Want to Look at

Author: Aileen Buckley

Publisher: Esri Press

Edition: 2012

America's white majority is aging out.

De Visé, David, "America's white majority is aging out." The Hill.com, August 7, 2023.

<https://thehill.com/homenews/race-politics/4138228-americas-white-majority-is-aging-out/>
(<https://thehill.com/homenews/race-politics/4138228-americas-white-majority-is-aging-out/>).

(accessed January 16, 2025)

Can a Historic Hawaii Community Modernize without Losing What Makes It Unique?

Fung, Judy, "Can a Historic Hawaii Community Modernize without Losing What Makes It Unique?" Esri Blog, August 1, 2023. <https://www.esri.com/about/newsroom/blog/smart-planningkauai/> (<https://www.esri.com/about/newsroom/blog/smart-planning-kauai/>) (accessed January 16, 2025)

The ArcGIS Book: 10 Big Ideas About Applying the Science of Where,

Author: Christian Harder

Publisher: Esri Press, 2017

Edition: 2nd

Availability: Free Download

Read for free here: <https://www.geodata.com.ph/news/2-free-arcgis-books-from-esri> (<https://www.geodata.com.ph/news/2-free-arcgis-books-from-esri>)

The differences between race and ethnicity – and why they're so hard to define

Kaur, Harmeet, "The differences between race and ethnicity – and why they're so hard to define." CNN.com, May 30, 2023. <https://www.cnn.com/2023/05/30/us/race-ethnicity-differenceexplainer-cec/index.html> (<https://www.cnn.com/2023/05/30/us/race-ethnicity-difference-explainer-cec/index.html>) (accessed January 16, 2025)

How Fannie Mae Studies Climate Impact on US Housing

Martonik, Alexander, "How Fannie Mae Studies Climate Impact on US Housing." Esri, WhereNext Magazine, August 1, 2023. <https://www.esri.com/about/newsroom/publications/wherenext/mary-lennon-fannie-mae-profile/#:~:text=Article%20snapshot%3A%20To%20assess%20housing,could%20reveal%20about%20social%20change.> (<https://www.esri.com/about/newsroom/publications/wherenext/mary-lennon-fannie-mae-profile/#:~:text=Article%20snapshot%3A%20To%20assess%20housing,could%20reveal%20about%20social%20change.>) (accessed January 16, 2025)

GIS Cartography: A Guide to Effective Map Design

Author: Gretchen N. Peterson

Publisher: CRC Press

Edition: 2nd

Availability: MLK Library - see Canvas Library Course Materials

Please do not stay logged on with the book open. This prevents other students from access the online text. Download the text you're interested in to your computer if you plan to spend time reading. You can download approximately 30% of the book each day. This is a limitation set by ProQuest Ebook Central.

Uncovering Possibility: The Keys to Making Cities More Resilient.

Rowe, Mary, "Uncovering Possibility: The Keys to Making Cities More Resilient." n.d. (podcast) <https://www.esri.com/about/newsroom/podcast/uncovering-possibility-the-keys-to-making-cities-more-resilient/> (<https://www.esri.com/about/newsroom/podcast/uncovering-possibility-the-keys-to-making-cities-more-resilient/>) (accessed January 16, 2025)

Course Requirements and Assignments

Many thanks to Rick Kos, for providing the foundational materials for this class.

Course Module: 1 – Course Overview, Introductions

Students have an opportunity to introduce themselves to one another while learning about the objectives of the course.

- **Lecture video 1:** overview of the course learning objectives; a little about my work using GIS
- **Assignment 1:** introduce yourself!
- **Quiz 1:** Module 1 key points

Course Module: 2 – GIS & Urban Planning Applications

This module focuses on the uses of GIS for a variety of urban planning analyses. Students will listen to a podcast, read an article, and review a blog posting on, respectively, the uses of GIS for urban resilience, affordable housing provision, and the preservation of neighborhood character. Next, students will choose from one of a few options to further explore professional uses of GIS in the urban planning field.

- **Videos:** "The Geospatial Revolution"
- **Lecture video 2:** how do urban planners use GIS tools?
- **Reading:** "The ArcGIS Book" (pgs. 2-14)
- **Assignment 2:** readings and report on applications of GIS for urban planning
- **Quiz 2:** Module 2 key points

Course Module: 3 – Map Design and Data Visualization

This module asks students to apply the terms and techniques of professional cartographic design and critique two map as to their effectiveness as communication tools.

- **Lecture video 3:** terms, tools, and techniques of professional map design

- **Reading:** "Make Maps People Want to Look At"
- **Assignment 3:** critique two maps using principles of professional map design

Course Module: 4 – Getting to Know ArcGIS Online

This module provides students with a wide selection of guided exercises to explore Esri's ArcGIS Online platform. Students will choose a few exercises of interest, document their key findings and, where appropriate, submit URLs to their completed webmaps and webapps.

- **Lecture video 4:** What is ArcGIS Online; How to access your SJSU AGOL account.
- **Reading:** "The ArcGIS Book" (pgs. 18-34)
- **Video:** Overview of ArcGIS Online
- **Assignment 4:** selected exercises using ArcGIS Online

Course Module : 5 – GIS for Demographic Analysis

This module provides students with exposure to Esri's Community Analyst (soon to be Business Analyst) cloud-based mapping application. Community Analyst contains a wealth of demographic and consumer/business data of great value to analyses undertaken during the community assessment phase of work undertaken by urban planners. Students will choose a neighborhood and prepare a series of demographic maps and related data tables and infographics.

- **Reading:** "America's white majority is aging out"
- **Reading:** "The differences between race and ethnicity – and why they're so hard to define."
- **Lecture video 5:** demographic mapping for urban planning
- **Assignment 5:** using Esri's Community Analyst (soon to be Business Analyst) webapp for neighborhood-scale demographic mapping

Course Module: 6 – Field Data Collection with Survey123

- **Lecture video 6:** field data collection for urban planning applications
- **Video:** overview of Esri's Survey123 smartphone app
- **Assignment 6:** collect and map neighborhood-level data using Survey123

Course Module: 7 – Course Wrap-up

This module wraps up the course and provides an overview of other GIS-related courses taught in the Department of Urban and Regional Planning

- **Lecture video 7:** Course wrap-up and an overview of other GIS courses taught in the Dept. of Urban & Regional Planning

Grading Information

Each assignment will earn points reflected in the table above. For example, for Assignment 3 you can earn between 0 and 15 points. At the end of the semester, the points you earned on each assignment will be summed and divided by the total points of all assignments/quizzes and a letter

grade for your work assigned in the course according to this scheme:

- A+ (98-100); A (94-97); A- (90-93)
- B+ (87-89); B (84-87); B- (80-83)
- C+ (77-79); C (74-77); C- (70-73)
- D+ (67-69); D (64-67); D- (60-63)
- F (<60)

High grades must be earned and all grades reflect a comprehensive estimation of a student's knowledge and effort, just as our efforts in a professional work environment are judged accordingly and considered by supervisors for promotions and pay raises. For example, a grade of "A" is reserved for exceptional work, as a way of honoring those who go "above and beyond" when completing course assignments.

University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

This is an asynchronous class. There will be no formal meetings but I may offer Zoom-based tutorials as I see the need.

There are two dates associated with each assignment. The first is the date that I recommend you submit the assignment in order to keep a consistent pace. The second is the date, that once passed, an unsubmitted assignment will start accruing a **late penalty of 5% of the total grade/day or portion thereof.**

Please don't wait to the official due date to start submitting course work. You will regret your procrastination!

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

Assignment/Quiz	Recommended Submission Date	Due Date (11:59 pm)	Course Learning Objective(s) Covered	Percentage of Course Grade
Assignment 1 - Introduction	1/30/25	3/27/25	--	5%
Quiz 1 - Course objectives and syllabus review	1/30/25	3/27/25	2	5%

Assignment 2 - Application of GIS for urban planning	2/13/25	4/10/25	2	10%
Quiz 2 - Module 2 topics	2/13/25	4/10/25	2	5%
Assignment 3 - Best practices for effective map design	3/06/25	4/17/25	1, 2	15%
Assignment 4 - Getting to know ArcGIS Online	3/27/25	4/24/25	2, 3	20%
Assignment 5 - Mapping demographic data and Esri's Community Analyst (soon to be Business Analyst) web application	4/24/25	5/01/25	2, 3	20%
Assignment 6 - Field data collection with your smartphone and Survey123	5/08/25	5/08/25	2, 3	20%