Geographic Information Systems Overview: Urban Planning Applications

URBP 275G

Summer 2025   Section 81   Fully Online   1 Unit(s)   06/02/2025 to 08/08/2025   Modified 05/31/2025

👤 Contact Information

Instructor: Rick Kos , AICP

Email: richard.kos@sjsu.edu
Phone: (510) 504-5064
Website: https://www.linkedin.com/in/richard-kos-aicp-95b17a47/ (https://www.linkedin.com/in/richard-kos-aicp-95b17a47/)

Office Hours

Zoom Office Hours

Use this link (https://docs.google.com/spreadsheets/d/1HL2I3JUGe8ITsWQrp_O9x22sUM6GvP0zuaNoVSMcZkc/edit#gid=3) to schedule office hours (generally Tuesdays and Thursdays in the late afternoon). If these times don't work for you schedule email me (mailto:%20richard.kos@sjsu.edu) and set up a separate meeting.

🕐 Course Information

OVERVIEW

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 Business Analyst.

GIS SKILLS

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 Business Analyst webapp for mapping Census demographic data at a neighborhood scale.

NEXT STEPS?
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 FORMAT
This is an 'asynchronous' course with no scheduled class meetings. You will complete coursework by proceeding through the seven course modules on Canvas.

I hope you'll enjoy your geospatial adventure!

🖥 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 during office hours or via email.

IMPORTANT

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 <u>not</u> sufficient to write to me and vaguely state, "I can't get this to work" and expect useful assistance without <u>also</u> including relevant screen captures and a description of the solution steps you've tried. This will allow us to quickly address your problem and move forward. Thanks!

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 the majority students who submit their work on time, I can not accept any submissions after the established due dates; late assignments will likely receive a grade of 50.

ONE "LIFELINE"

I can accept a maximum of <u>one</u> late assignment, with no grade penalty, under two conditions: **(1)** that you notify me via email of the expected late submission; and **(2)** that you provide an updated due date. This will help me schedule my grading time.

SUBMIT ONLY YOUR FINEST WORK

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. More specifically, all assignments must include a cover page with your name, date, course number, assignment number and a relevant title that reflects the assignment objectives.

Neatness, clarity, and organization will influence your grade on each assignment.

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 45 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.

FOR SUMMER CLASSES:

Because this is a one-unit summer class than spans ten weeks, you can expect to spend a minimum of 45 hours (10 weeks * 4 to 5 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.
- Content generated by an Artificial Intelligence third-party service or site (AI-generated content) without proper attribution or authorization would also be a form of plagiarism.

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 at [this link (https://libguides.sjsu.edu/c.php?g=853661&p=6111789)](https://libguides.sjsu.edu/c.php?g=853661&p=6111789).

IMPORTANT
If you still have questions about avoiding plagiarism and properly citing your work, 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 MLK 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 plus a corresponding reference list.

In this class, you should use the "notes" style for your source citations.

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)](mailto:lauren.decelle@sjsu.edu)

Meet Your Instructor: Rick Kos, AICP

EDUCATIONAL BACKGROUND AND EAST COAST WORK
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 wo 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

MY NEW BAY AREA LIFE

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 ransit 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.

Since 2008 I have taught several courses in the Dept. of Urban & Regional Planning at SJSU where I also serve as the department's Practitioner in Residence, Graduate Advisor, and Admissions Director. Working with students and helping them prepare for satisfying careers is my life's work.

In the summer of 2021 I began teaching urban planning courses at Stanford University.

Let's see......other things that keep me busy:

- I have co-authored a book titled GIS for Economic Development with Professor Mike Pogodzinski of the SJSU Economics Department. The book was published by Esri Press.
- To keep my skills fresh and generate some extra income, I have a sole proprietorship where I complete GIS projects for a variety of Bay Area clients including municipal governments and non-profit organizations.
- I am the Education Director and Vice President of BayGeo, the Bay Area's geospatial networking and training organization. I manage BayGeo's GIS Education Center which offers training workshops for students and professionals.

▤ 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 this link (https://sjsu.edu/urbanplanning/graduate-programs/masters-in-urban-planning/pab-knowledge.php).

📶 Course Learning Outcomes (CLOs)

Upon successful completion of the course, you 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.

Make Maps People Want to Look At

Buckley, Aileen, "Make Maps People Want to Look At", Winter 2012,
https://www.esri.com/news/arcuser/0112/make-maps-people-want-to-look-at.html
(https://www.esri.com/news/arcuser/0112/make-maps-people-want-to-look-at.html), (accessed January 22, 2025)

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 (2014)
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/)](https://www.esri.com/about/newsroom/podcast/uncovering-possibility-the-keys-to-making-cities-more-resilient/) (accessed January 16, 2025)

≔ Course Requirements and Assignments

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 maps as to their effectiveness as communication tools.

- **Lecture video 3**: terms, tools, and techniques of processional 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 Business Analyst cloud-based mapping application. Business 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 Business Analyst webapp for neighborhood-scale demographic mapping

Course Module: 6 – Field Data Collection with Survey123

This module focuses on collecting data in the field using Esri's Survey123 application. Students will choose a small, local study area, design a field data collection instrument in Survey123, visit the study area to gather information on a smartphone, and produce an interactive webmap of findings.

- **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 that, taken together, could ultimately sum to 100. For example, for Assignment 3 you can earn between 0 and 15 points. (the points for each assignment are listed in the "Course Schedule" section further down on this page.)

At the end of the semester, the points you earned on each assignment will be summed. Then, a letter grade for your work in the course will be entered into your record 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 <u>exceptional</u> 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, which means that there are no scheduled class meetings.

Due dates for each assignment are listed below

RICK'S TIP: Please don't wait until the night before the due date to start an assignment. You will likely regret your procrastination! (remember that you have one "lifeline" to submit a maximum of <u>one</u> assignment late - see prior section for details)

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

Assignment/Quiz	Due Date (11:59 pm)	Course Learning Objective(s) Covered	Percentage of Course Grade
Assignment 1 - Introduction	June 8	--	5%
Quiz 1 - Course objectives and syllabus review	June 8	2	5%
Assignment 2 - Applications of GIS for urban planning	June 15	2	10%
Quiz 2 - Module 2 topics	June 15	2	5%
Assignment 3 - Best practices for effective map design	June 29	1, 2	15%
Assignment 4 - Getting to know ArcGIS Online	July 13	2, 3	20%
Assignment 5 - Mapping demographic data and Esri's Business Analyst web application	July 27	3	20%
Assignment 6 - Field data collection with your smartphone and the Survey123 app	August 8	2, 3	20%