SAN JOSÉ STATE UNIVERSITY
URBAN AND REGIONAL PLANNING DEPARTMENT
URBP 275G – GEOGRAPHIC INFORMATION SYSTEMS OVERVIEW
SPRING 2023

Instructor:	Rick Kos, AICP
Email:	Richard.Kos@sjsu.edu
Office hours:	Tuesdays and Thursdays. Appointments are strongly preferred. Sign up here: https://goo.gl/pEvVod
Class days/time:	This will be an 'asynchronous' course with no scheduled class meetings. Students will complete **any four of the five** course assignments at any time by 11:59 p.m. on March 24, 2023. In addition to support from the instructor throughout the semester via phone, email, and Zoom, students are strongly encouraged to attend two optional, Zoom sessions (listed below) with the instructor who will be available to address questions. See Zoom links on last page of this syllabus and on Canvas. • Thursday, January 26 (12:00 p.m. – 1:00 p.m.) • Thursday, February 16 (12:00 p.m. – 1:00 p.m.)
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 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 Community Analyst.

You'll explore a variety of topics including site suitability analysis using a paper-based map overlay technique, exploring geographic patterns of childhood poverty in Detroit, designing hurricane evacuation routes for Houston, conducting a comparative analysis of two San Francisco neighborhoods using urban sustainability indicators, and collecting data in a neighborhood of your choice using a smartphone app and producing a web map of your findings.

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 Learning Objectives

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 https://www.sjsu.edu/urbanplanning/graduate-programs/masters-in-urban-planning/pab-knowledge.php (accessed December 26, 2022)

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 PDF version of book from Canvas.

"The Age of Megacities" (website)
https://storymaps.arcgis.com/stories/a900831b442e43c79cf9eeb399d5440f (accessed Dec. 26, 2022)

"Urban Evolution – A Brief Introduction" (website)
https://storymaps.arcgis.com/stories/446efee44f8d49578d3c62bfe2c25fc1(accessed Dec. 26, 2022)

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.

Course Requirements and Assignments

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

Assignments	Due Date	Course Learning Objective(s) Covered	Percentage of Course Grade
1 – A manual map overlay process for site suitability analysis	Assignments can be submitted at any time before March 24, 2023 at 11:59 p.m. Students are required to complete **any four** of these five assignments.	2	Each assignment will constitute 25% of the final course grade. Students are required to complete **any four** of these five assignments.
2 – Analyzing childhood poverty patterns in Detroit, Michigan and mapping hurricane evacuation routes in Houston, Texas		1, 2, 3	
3 – Demographic mapping using Esri's Community Analyst webapp		1, 2, 3	
4 – Mapping urban sustainability indicators using the ArcGIS Online map viewer		1, 2, 3	
5 – Field data collection using Esri's Survey123 smartphone app		1, 2, 3	

Assignment 1 asks students to undertake a map overlay process in the context of a site suitability study – but without using any digital tools. This is designed to help students develop an appreciation for the accuracy and versatility of digital GIS mapping in subsequent assignments.

Assignment 2 will introduce students to the principles of working with geospatial, location-based data using the ArcGIS Online Map Viewer. Students will use U.S. Census data in the city of Detroit, Michigan to examine geographic patterns of childhood poverty. Next, students will produce a map of hurricane evacuation routes for the city of Houston, Texas while considering rates of vehicle ownership and how this might place certain neighborhoods in jeopardy during a natural disaster.

Assignment 3 provides students with exposure to Esri's Community 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 variety of demographic maps. As an optional exercise, students will be encouraged to explore a similar demographic mapping tool: Social Explorer.

Assignment 4 is a guided exercise with a focus on urban sustainability. Students will use the ArcGIS Online Map Viewer to undertake a comparative analysis of neighborhood-level urban sustainability indicators in San Francisco such as income distribution, racial diversity, access to food stores, and health care access. Prior to the mapping work, students will watch a series of videos to explore facets of urban sustainability and write responses and reactions to these videos.

Assignment 5 focuses on collecting data in the field using the Survey123 application. Students will choose a study area, design a field data collection instrument in Suvey123, visit the location to gather information on their smartphone, and produce an interactive webmap of their findings.

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 in 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 minimum course requirements. 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 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 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. 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.

In general, I will be quickly responsive to queries that meet these criteria and much less so for "lazy queries." This approach mirrors professional practice since supervisors expect valued employees to be proactive in solving problems.

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 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 any four required assignments (out of five) at any time before **11:59 p.m. on March 24, 2023.** I will not accept any submissions after this date. Assignments not completed by the date and time above will receive a grade of zero.

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 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, you can expect to spend a minimum of 45 hours (5 weeks * 9 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.

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 at http://www.sjsu.edu/gup/syllabusinfo/ (accessed Dec. 26, 2022)

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 (accessed Dec. 26, 2022)

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*, 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, 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.

Meet Your Instructor: Rick Kos, AICP

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.

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 for 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.

URBP-275G: GEOGRAPHIC INFORMATION SYSTEMS OVERVIEW
SPRING 2023 COURSE SCHEDULE

Students are required to complete any **four** of the five course assignments by 11:59 p.m. on March 24, 2023.

Course Module #1 – Course Overview, GIS Basics, Site Suitability

- Lecture video 1: overview of the course, syllabus, and assignments; GIS applications for urban planning
- **Assignment 1:** conducting site suitability analysis - without digital tools!

Course Module #2 – Using the ArcGIS Online Map Viewer

- Lecture video 2: the basics of Esri's ArcGIS Online cloud-based GIS platform
- **Assignment 2:** using the ArcGIS Online Map Viewer for urban analysis

Course Module #3 – Demographic Analysis

- Lecture video 3: demographic analysis and Esri's Community Analyst webapp
- **Assignment 3:** exploring Social Explorer and Esri's Community Analyst webapp

Course Module #4 – Urban Sustainability

- Lecture video 4: urban sustainability topics
- **Assignment 4:** using the ArcGIS Online map viewer to compare two San Francisco neighborhoods using urban sustainability indicators

Course Module #5 – Field Data Collection and Mapping

- Lecture video 5: field data collection with Esri's Survey123 application
- **Assignment 5:** collecting and mapping field data in a neighborhood near you using Survey123
- Lecture video 6: Course wrap-up and an overview of other GIS courses that I teach in the Dept. of Urban & Regional Planning

Optional/Encouraged "Drop-in" Office Hours Session #1

- **Thursday, January 26, 2023** (12:00 p.m. – 1:00 p.m.)
- Zoom link: https://sjsu.zoom.us/j/82065129695

Optional/Encouraged "Drop-in" Office Hours Session #2

- **Thursday, February 16, 2023** (12:00 p.m. – 1:00 p.m.)
- Zoom link: https://sjsu.zoom.us/j/88142342017