

SAN JOSÉ STATE UNIVERSITY
URBAN AND REGIONAL PLANNING DEPARTMENT
URBP-179B/279: ADVANCED GIS FOR URBAN PLANNING
FALL 2019

Instructor:	Rick Kos, AICP
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Class days/time:	Thursdays 4:30 – 7:00 pm
Classroom:	Washington Square Hall (WSQ) 208
Class website:	All course materials will be available on Canvas.
Prerequisites:	Successful completion of URBP-179A/278, or instructor consent. Students are expected to have prior experience with ArcGIS, including the ability to perform attribute and spatial queries, geocode, georeference, basic geoprocessing, and the ability to design a cartographically complete map.
Units	4 units

Course Catalog Description

URBP-279: Further examination of advanced geographic information systems (GIS) applications to urban and regional planning topics.

URBP-179B: Continued study of how geographic information systems (GIS) can be applied to urban and regional planning topics.

Course Description, Format, and Learning Objectives

The class is taught mainly as a combined lecture and computer laboratory course using Esri's ArcGIS 10.6.1 software in a variety of hands-on exercises. The course will consist of three primary components, described below.

1. Geospatial Analysis Skill-Building (70% of course grade): we will explore seven intriguing aspects of geospatial analysis and their applications to professional-level urban planning analysis:

Time-Enabled Geospatial Analysis: urban planners are concerned with changes to our human habitat over time such as shifting demographic patterns or fluctuating locations of crime in a neighborhood. ArcGIS 10.6.1 contains a number of tools to facilitate time-enabled (i.e. temporal) analysis. We will explore these tools in the context of crime mapping in Oakland, the expansion of big-box retail in the United States, and the spatial distribution and magnitude of earthquakes in California over the past century.

Spatial Joins: we will utilize tools and techniques to integrate geospatial data from multiple map layers. Conceptualizing – and then properly executing – spatial joins is excellent practice in adopting a “puzzle-solving”, linear thinking, and pre-planned approach that is essential for successfully using the advanced tools we will cover later in this course.

ArcGIS Network Analyst: this extension to ArcGIS opens the door to numerous applications of GIS for transportation planning including the generation of network-based service areas (e.g. “walk-sheds” to/from transit stations), closest facility analysis (useful for emergency planning applications), shortest path analysis, and the generation of origin-destination cost matrices (tabular summaries of distances between multiple locations). After learning Network Analyst basics, you will have an opportunity to craft an independent mini-project where you’ll put this highly practical ArcGIS extension to the test.

ArcGIS Spatial Analyst: this ArcGIS extension is designed for powerful raster-based analysis. A common application of Spatial Analyst to urban planning is the design and execution of site suitability studies that incorporate multiple, disparate, standardized raster inputs such as landform, land use, access to transportation, and demographic information.

ArcGIS Pro and 3D Analysis: ArcGIS Pro is the eventual replacement to ArcGIS Desktop, so it is being introduced in this course in order to keep students on the cutting edge of Esri geospatial technology. We will practice using ArcGIS Pro for three-dimensional visualization and analysis by examining the urban form of a major world city.

Python Scripting: Python is the programming language that ArcGIS is based upon. Python basics are surprisingly easy to learn and the language allows the ArcGIS user to write specialized tools, set up iterative models, and customize geoprocessing tools to fit a particular project objective. After learning the basics of the Python language and use of the Python scripting window, students will have an opportunity to create and modify simple Python scripts to “peek behind the scenes” of ArcMap’s most commonly used geoprocessing tools. Students will also be directed to a few Python self-study resources.

The Spatial Statistics Toolbox: contains statistical tools for analyzing spatial distributions, patterns, processes, and relationships. Unlike traditional non-spatial statistical methods, they incorporate space (proximity, area, connectivity, and/or other spatial relationships) directly into their mathematics.¹ We will take a high-level tour of tools in four toolset groupings: Analyzing Patterns, Mapping Clusters, Measuring Geographic Distributions, and Modeling Spatial Relationships.

2. Client Consultation Project (25% of course grade; Professional Engagement Unit): our class will provide technical expertise to a number of Bay Area clients. You will have a chance to meet representatives of these organizations, learn about their mission, and get up to speed on the spatial analysis work that they would like us to conduct for them. These projects will give you a real-world opportunity to apply your ArcGIS skills and to provide a valuable service to a client. Additionally, this work will yield detailed maps and robust data analysis that will be a highly useful part of your San Jose State University portfolio.

Each student will be expected to fully “rise to the occasion” and play a proactive role in the conceptualization, design, and execution of the client projects. Students will also be expected to work in small teams in a mutually supportive, fully accountable, and positive manner under the guidance of a project manager (i.e. me). Doing so will help students further develop immediately

¹ Adapted from “Spatial Statistics Resources” from Esri, <http://blogs.esri.com/esri/arcgis/2010/07/13/spatial-statistics-resources/> (accessed August 5, 2014)

transferable workplace skills and finish our project on time while endeavoring to meet and exceed client expectations.

3. Active and Consistent Participation in Class (5% of course grade): each student will be expected to bring their fullest measure of energy, dedication, engagement and participation to each class meeting. This aspect of the course grade will be measured by observations of each student's consistent, active, well-prepared, and measurable engagement in lectures and reading discussions, small team tasks, and presentations in class.

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

1. Use ArcGIS 10.6.1 to design a professional-grade, visually-balanced, cartographically-complete map of the sort commonly employed by contemporary urban planners. It is expected that the maps generated in this course will provide students with highly valuable additions to their professional portfolio to demonstrate their ArcGIS capabilities to current and future employers.
2. Define the inputs, outputs, and applications of spatial joins in order to integrate multiple geospatial data sets.
3. Conduct transportation planning analysis using the ArcGIS Network Analyst extension, including network service areas, closest facility analysis, and shortest route analysis.
4. Conduct raster-based site suitability analyses using the ArcGIS Spatial Analyst extension and define the eight primary functional categories of raster analysis using Spatial Analyst.
5. Describe common applications of core tools in the ArcGIS Spatial Statistics toolbox, including at least two tools in each of the four primary toolsets: Analyzing Patterns, Mapping Clusters, Measuring Geographic Distributions, and Modeling Spatial Relationships.
6. Use the time-based tools of ArcGIS 10.6.1 to model temporal changes in the spatial distributions of earthquake activity, retail store expansion, and neighborhood crime.
7. Define the primary inputs, terminology, and ArcGIS-specific tools needed to utilize the Python scripting language in a manner that allows for the customization of ArcGIS geoprocessing tools.
8. Implement effective, efficient and client-responsive GIS project management skills. The student will collaboratively determine an approach to a GIS project from the outset and establish priorities, milestones, goals and subtasks. Students will also anticipate and resolve setbacks and adopt techniques to get it "right" as early in the project as possible.
9. Create a complete geodatabase for course projects by incorporating vector, tabular and raster data into a complete project geodatabase, and import geospatial data from multiple, remote sources into the geodatabase.

Planning Accreditation Board (PAB) Knowledge Components

This course partially covers the following PAB Knowledge Components: 2a, 2b, 2c, 2f. A complete list of the PAB Knowledge Components can be found at <http://www.sjsu.edu/urbanplanning/courses/pabknowledge.html>

Required Course Readings and Videos

I have decided not to require a textbook in an effort to save students some money while also recognizing that ArcGIS software changes faster than tutorial textbooks can be produced! In lieu of

a textbook, students will be provided with readings, data, and tutorial instructions via Canvas. Below are the required readings and videos:

Reading #1: ArcGIS Network Analyst background

- Esri, 2017. “Network Analyst: An Introduction”, Esri Events.
<https://www.youtube.com/watch?v=agS1Fzq04l4> (accessed August 15, 2019)

Reading #2: ArcGIS Spatial Analyst background

- Esri, 2019. “What is the Spatial Analyst Extension?”
<https://desktop.arcgis.com/en/arcmap/10.6/extensions/spatial-analyst/what-is-the-spatial-analyst-extension.htm> (accessed August 15, 2019)
- From the left-side menu on the site above, also read the following four articles:
 - Essential Spatial Analyst terms
 - A quick tour of Spatial Analyst
 - About raster data in Spatial Analyst
 - Capabilities of the Spatial Analyst toolbox

Reading #3: ArcGIS Pro background

- Esri, 2019. “Introducing ArcGIS Pro”. <https://www.youtube.com/watch?v=soBtBP6aZ60> (accessed August 15, 2019)
- Esri, 2019. “About ArcGIS Pro”. <https://pro.arcgis.com/en/pro-app/get-started/get-started.htm> (accessed August 15, 2019)

Reading #4: Python programming basics

- Van Rees, Eric. 2016. “Programming in ArcGIS with Python – A Beginners Guide”
<https://geoawesomeness.com/programming-arcgis-python-beginners-guide/> (accessed August 15, 2019)

Reading #5: Spatial Statistics

- Esri, 2019. “Spatial Statistics toolbox sample applications”.
<https://desktop.arcgis.com/en/arcmap/10.6/tools/spatial-statistics-toolbox/spatial-statistics-toolbox-sample-applications.htm> (accessed August 15, 2019)

Recommended Course Readings

Brewer, Cynthia A. *Designing Better Maps: A Guide for GIS Users*. Redlands, CA: Esri Press, 2005.

Brown, Clint and Christina Harder. “The ArcGIS Imagery Book”. Redlands, CA: Esri Press, 2016.

Dangermond, Jack and Matt Artz. “Understanding Earth: GIS Technology Drives a New Relationship Between Humans and the Environment”. Redlands, CA: Esri Press, 2012.

_____. “Essays on Geography and GIS (Volumes 5 and 6)”. Redlands, CA: Esri Press, 2012 and 2013. (*skim for selected articles of interest*)

Peterson, Gretchen N. *GIS Cartography: A Guide to Effective Map Design*. Boca Raton, FL: CRC, 2009.

Required Software, Recommended Materials

ArcGIS 10.6.1 and Extensions is required of all students. This software is installed on each WSQ208 lab and department lounge computer. Also, each student will receive a free student license of Esri’s

ArcGIS 10.6.1 software and ArcGIS Pro 2.3 for use on a personal computer; it will expire one year after installation. Please note that ArcGIS software only runs on the Windows operating system. In order to run ArcGIS in Windows on a Mac, virtualization software is needed such as Apple's BootCamp, SWSOft's Parallels, or VMware Fusion. (I can provide instructions for installing ArcGIS on a Mac.) You are responsible for installing and maintaining your software on a personal computer and for properly following Esri's installation instructions.

It is HIGHLY recommended that you check your personal computer to see if it meets the minimum standards to run ArcGIS Desktop 10.6.1 and ArcGIS Pro 2.3. Visit esri.com for details.

The computer laboratory in WSQ208 and “mini-lab” (in the Planning Department lounge area) are available to you to complete class assignments and homework. If you plan to use your personal computer to complete assignments started in class, a USB flash drive with at least 2 GB of capacity is strongly recommended for saving your in-class work and transferring it to your personal computer.

Fundamentals for Success in this Course

I will make every effort to help you succeed in this course so that you can use ArcGIS confidently and successfully in your future career endeavors. 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; higher grades correlate with student efforts that exceed expectations. Here are some tips to help you succeed this semester:

Prior GIS experience: Students are expected to have prior experience with ArcGIS 10, including the ability to perform basic attribute and spatial queries and the ability to produce a cartographically correct map using multiple geospatial data layers. Self-study using the non-required “GIS 20 Essential Skills” (3rd edition) is strongly recommended for students wishing to brush up on the fundamental GIS skills expected for participation in this course. Additional prerequisite skills expected: geocoding, georeferencing, basic geoprocessing, metadata documentation.

Maintain a fast pace: This will be a fast-moving and 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. There will be numerous, detailed, and sometimes overlapping assignments – please prepare for this from the outset.

Computer competencies: Competence with the Windows operating system is expected, including the storing, copying and management of multiple data types; managing multiple windows and applications; and techniques for saving work frequently. Familiarity with data entry, sorting, editing and report generation using Microsoft Excel is also expected.

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

Seek Help Effectively: Since GIS practitioners and 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 effectively 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 be less inclined to address quickly. 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 tun 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 certain 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 prepared and organized, with clear learning objectives and a schedule for each class period
- 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 syllabus requirements
- To fully read and understand all aspects of the 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

Course Assignments

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

Assignment Title and Description	Percent of Total Grade	Course Learning Objectives
ArcGIS 10.6.1 Skills (70% of course grade)		
1 – Time-Enabled Data in ArcGIS	10%	1, 2
2 – ArcGIS Network Analyst	10%	1, 3

3 – ArcGIS Spatial Analyst	15%	4
4 – ArcGIS Pro & 3D Analysis	10%	6
5 – Python Scripting Basics	10%	5
6 – Spatial Statistics	15%	7
Engagement Activities (25% of course grade)		
7 – GIS Consulting Project	25%	1, 3, 4, 8, 9, 10
Consistently Active Engagement in all Class Activities, Assignments, Discussions, Projects	5%	

Detailed steps for completing assignments will be posted to Canvas. In general, the assignments will cover the following:

Assignment 1: Students will utilize the time-enabled capabilities of ArcGIS 10 to model fluctuating crime locations in Oakland, CA; explore the spread of “big-box” retail in the United States; and the distribution of California earthquake activity over the past century.

Assignment 2: Students will complete tutorials in the basic functionality and inputs of the ArcGIS Network Analyst extension, then complete an independent mini-project to explore Network Analyst capabilities using data collected by the student.

Assignment 3: Students will complete training material to learn fundamental raster analysis basics and then use Spatial Analyst to undertake guided site suitability analyses that may include retail siting, elementary school siting, and the location of a new hiking trail.

Assignment 4: Students will explore the core functionality of ArcGIS Pro and apply a set of tools to conduct three-dimensional visualization of a major world city.

Assignment 5: A basic tutorial in Python scripting will be provided along with exercises to practice scripting in a manner that illustrates the capabilities of Python to design, edit, and execute geoprocessing functions..

Assignment 6: Students will be guided in an overview of core tools in the four Spatial Statistics toolsets then, through short exercises and presentations, will demonstrate the relevance of the tools to urban planning scenarios

Assignment 7 (Engagement Unit): The details will unfold during our consultancy with a number of Bay Area organizations. Students can expect to undertake a variety of tasks in small teams, including data collection and organization, metadata generation, report writing, presentation of findings to the client, and production of analytical, cartographically complete maps.

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, we first convert the letter grade for each assignment to a number using a 4-point scale (A+ = 4.33, 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).

Please visit the “Grading Standards” link on Canvas for more details pertaining to how I will evaluate written and oral work.

Students in 179B: I will grade work submitted by students in URBP-179B more leniently than that submitted by graduate level students. Typically, this will generally result in a half-grade difference; for example, an undergraduate student who earns a grade of B on an assignment will correlate with a grade of B- for a graduate student completing the same assignment with similar quality.

I understand that grades are important to students on both a personal and professional level. They are a measure of your achievements in class and your progress towards meeting the course learning objectives. I also understand that there tends to be a great deal of “grade anxiety” in a university setting. The best way that I can help students with these matters is to be as clear as possible about grading criteria and weightings in this syllabus, so that you can plan accordingly. Please understand that I am a very thoughtful, careful, thorough and fair grader of student assignments and it is a responsibility that I do not take lightly. You are encouraged to review your graded assignments with me at any time to discuss my comments and suggestions for improvement.

I’ve been called a “tough grader”, and it’s true! High grades must be earned and all grades reflect my comprehensive estimation of a student’s effort, just as our efforts in a professional work environment are judged accordingly and considered by supervisors for promotions and pay raises. For example, I reserve a grade of “A” only for **exceptional** work, as a way of honoring students who go “above and beyond” when completing course assignments. After all, the strict definition of an “A” grade is “exceptional”.... not “average” or even “above average”.

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** and, if appropriate, the other students in a group (for group project work). If you do not communicate an anticipated late assignment within this timeframe, the assignment will receive a grade of zero.
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 two late assignments that adhere to this policy 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 work 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 the student’s name, date, course number, assignment number and other items as directed. Neatness, clarity and organization do count.

As in a professional setting, typed submissions are expected; handwritten assignments are not acceptable. Printing assignments on the clean sides of already-printed paper is neither professional

nor acceptable (though the resource conservation intent is appreciated, of course). Assignments not meeting these fundamental practices of professional presentation will generally receive a one-half to one-point deduction in the grade.

Final Examination or Evaluation

Completion of individual and team-based tasks for the client project will effectively constitute the final exam for this course. Also, a portion of the final class meeting on December 14 will be devoted to a reflection on skills covered in the course as well as suggestions for continued GIS study.

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 four-unit class, you can expect to spend a minimum of nine 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. For this class, you will have to undertake additional activities outside the class hours such as completion of tasks for our consultancy with Garden To Table. Details on how to complete these activities will be provided in handouts to be distributed in class and posted to Canvas.

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 978-0226816388). 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 since I feel that it creates a less visually-distracting experience for readers than the parenthetical-reference style.

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.....

I am very much looking forward to working with you this semester and expect that you will learn quite a bit in our sixteen weeks together. We'll have some fun along the way, too. My goal is to teach you a number of intermediate- to advanced-level ArcGIS 10.6.1 skills clearly, with minimal jargon and maximum time using the software to help you remain competitive in the labor market.

Throughout my career using GIS, I have never strayed far from my roots in urban and regional planning and this combination of experience is what I am excited to share with you. I take pride in providing personal, one-on-one attention to the needs of my students and strongly encourage you to take advantage of all opportunities to meet with me during class and during office hours.

A little about my background: 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 a planner in Middlesex County, New Jersey, 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. I thoroughly enjoyed defending the principles of traditional town planning, often to developers and citizens that were not particularly receptive, at first, to deviations from the conventional suburban planning model.

After relocating to the Bay Area in 2000, I worked with the Metropolitan Transportation Commission in Oakland as a GIS Analyst. The Bay Area Lifeline Transportation Map that I completed for MTC was chosen from among thousands of entries for inclusion in Esri's *2003 Map Book*. This annual publication showcases innovative uses of Esri's GIS software to solve real-world problems. The Lifeline Map locates disadvantaged neighborhoods and thousands of geocoded essential destinations (e.g. grocery stores, daycare centers, clinics) within the nine 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.

Additionally, I have co-authored a book titled *GIS for Economic Development* with Professor Mike Pogodzinski of the SJSU Economics Department. The book was released in late 2012 by Esri Press.

I also engage in occasional freelance GIS projects. For example, I am now assisting a former residents of the Marina district in San Francisco with mapping of historic sources of groundwater pollution in that neighborhood. Other recent clients include Mobility Planners, LLC (bus transit mapping); the Alameda County Water District (staff training); McKenzie & Albritton, LLC (maps related to telecommunications facility siting); BayGeo (managing the Bay Area GIS Education Center; and Perkins + Will (staff training), and Opticos Design (land use mapping and analysis).

Closing Thoughts.....

My primary objective is to ensure that by completing this course you will possess the intermediate-to advanced-level GIS skills valued by today's employers. Quite a few "alumni" of this course have secured internships and full-time jobs at firms and agencies across the region, specifically because they were able to demonstrate GIS expertise in their portfolios and at job interviews.

I am looking forward to helping you learn the intermediate to advanced capabilities of ArcGIS 10.6.1 this semester! As we work together over the next few months, you will be encouraged to think about integrating GIS into your other San José State coursework and capstone projects (e.g. your URBP-298 Masters Planning Report). There are many avenues for assistance and to accelerate your understanding of GIS: in-class exercises and personal guidance from me, at least four office hours per week, a terrific student assistant, and the ability to reach me via e-mail (I typically reply to clearly-worded messages very quickly). There is a lot of work to complete in this course and I am here to help you succeed - and we'll have some fun, too. Let's get started!

This will be my thirteenth year teaching GIS at San José State and, I must admit, it is my favorite job of the many I've listed above. Welcome, and let's have some fun with GIS! I'm here to help you succeed.

URBP-179B/279: ADVANCED GIS FOR URBAN PLANNING FALL 2019 COURSE SCHEDULE

The following course outline describes the general approach we will take this semester, but please bear in mind that specific details are subject to change with reasonable notice. I will communicate changes via email and verbally in class.

Date	Geospatial Analysis Skill-Building <i>(70% of Final Course Grade)</i>	Professional Engagement: GIS Consulting Projects <i>(25% of Final Course Grade)</i>
August 22	<ul style="list-style-type: none"> • Introductions; course/syllabus overview • Lab Exercise: working with time-enabled data • Assignment 1 Distributed: Time-Enabled Data • Preparations for client-based project (Assign. 7) 	
August 29	<ul style="list-style-type: none"> • Spatial joins “puzzle-solving” challenge • Consulting Projects: Meet the clients 	Assignment 7 Distributed and Discussed: Client Projects
September 05	<ul style="list-style-type: none"> • Assignment 1 Due (Time-Enabled Data) • Reading #1 Due: Network Analyst background • Lecture: ArcGIS Network Analyst I • Network Analyst practice exercises • Assignment 2 Distributed: Network Analyst 	<p>Assignment 7-1 Due: RFP/Client Review</p> <p>Client project teams kick-off</p>
September 12	<ul style="list-style-type: none"> • Lecture: ArcGIS Network Analyst II • Network Analyst practice exercises 	
September 19	<ul style="list-style-type: none"> • Assignment 2 Due (Network Analyst) • Reading #2 Due: Spatial Analyst background • Lecture: ArcGIS Spatial Analyst I • Spatial Analyst practice exercises • Assignment 3 Distributed: Spatial Analyst 	
September 26	<ul style="list-style-type: none"> • Lecture: ArcGIS Spatial Analyst II • Spatial Analyst practice exercises 	<p>Assignment 7-2 Due: Data Review Report and Project Maps at 30% Stage</p>
October 03	<ul style="list-style-type: none"> • Lecture: ArcGIS Spatial Analyst III • Spatial Analyst practice exercises 	
October 10	<ul style="list-style-type: none"> • Assignment 3 Due (Spatial Analyst) • Exploring New Tools: ArcGIS Urban and/or QGIS and/or Urban Footprint 	
October 17	<ul style="list-style-type: none"> • Reading #3 Due: ArcGIS Pro background • Lecture: ArcGIS Pro and 3D Analysis I • ArcGIS Pro and 3D mapping practice exercises • Assignment 4 Distributed: ArcGIS Pro & 3D 	<p>Assignment 7-3 Due: Project Maps at 60% Stage</p>

October 24	<ul style="list-style-type: none"> • Lecture: ArcGIS Pro and 3D Analysis II • ArcGIS Pro and 3D mapping practice exercises • Client team presentations (15 minutes each) 	Assignment 7-4 Due: Status Report #1
October 31	<ul style="list-style-type: none"> • Assignment 4 Due (ArcGIS Pro & 3D) • Reading #4 Due: Python scripting basics • Lecture: Python scripting basics I • Using Python with ArcGIS: practice exercises • Assignment 5 Distributed: Python Scripting 	
November 07	<ul style="list-style-type: none"> • Lecture: Python scripting basics II • Using Python with ArcGIS: practice exercises • Client team presentations (15 minutes each) 	Assignment 7-5 Due: Draft Report Outline and Status Report #2 Due; Project Maps at 80% Stage
November 14	<ul style="list-style-type: none"> • Assignment 5 Due (Python Scripting Basics) • Reading #5 Due: Spatial statistics basics • Lecture: Spatial Statistics I • Spatial statistics practice exercises • Assignment 6 Distributed: Spatial Statistics 	
November 21	<ul style="list-style-type: none"> • Lecture: Spatial Statistics II • Spatial statistics practice exercises 	Recommended: Submit Draft Client Deliverables to Instructor and Student Assistant for review by 11:59 p.m. on December 2
November 28	No Class (Thanksgiving)	
December 05	<ul style="list-style-type: none"> • Assignment 6 Due (Spatial Statistics) • “Dress rehearsal” client team presentations • Draft deliverables due to clients by 10:00 p.m. 	Assignment 7-6 Due: Submit <u>Draft</u> Project to Client for Review; Rehearse for Final Presentation
December 12*	<ul style="list-style-type: none"> • Final, formal presentation to clients • Student peer reviews for client project work • End of Semester Celebration! 	Assignment 7-7 Due: Deliver <u>Final</u> Project to Client; Final Presentation to Client

* The events of this class session will constitute the culminating experience for the course (in effect, our “final exam”). Student attendance on the final exam date is mandatory.