

Geographic Information Systems for Public Policy, Planning & Development
Fall 2021
PPD 631 – 2 units

Location

January 14 virtual class. Other meetings in RGL
 University of Southern California, Los Angeles Campus

Fridays

January 14 and April 1 – 8:30-5:00

February 4 and March 4 – 8:30-noon

Each week, there will be on-line presentations or discussions available. Topics can be viewed again any time. Tentative schedule:

Available week of	Topic	Assignment
January 10 Class meeting January 14	Intro to GIS	Install software before class meeting if possible. First exercise in class (provided by instructors)
January 17	Map basics	Complete Chapters 2 & 3
January 24	Aerial imagery	Complete Chapters 4 & 5
January 31 Class meeting February 4	Online GIS & Projects	Complete Chapters 6 & 9 & submit project ideas
February 7	Bad maps!	Complete Chapters 7 & 8
February 14	Cartography	Complete Chapters 10 & 11
February 21	Calculating scores	Complete Chapters 12 & 13 & project outline
February 28 Class meeting March 4	Geodesign	Complete Chapter 14
March 7	Story maps	Complete Chapters 15 & 17
March 14	Spring break	
March 21	Data sharing	Complete Chapters 16 & 18 & have project data
March 28 Class meeting April 1	Project roundtable	Complete Chapters 19 & 20 Project map due April 1
April 4	Project work session	Optional meeting April 8 (online)
April 11	Projects	Project due April 15
April 18	Tapestry segmentation data	Revise projects
April 25	Sharing projects	Optional meeting April 29 (online)
May 6		Final exam (on-line assignment)

Assignments are due prior to the start of the next week. For tutorial assignments, students should begin each lesson after viewing the presentation.

Faculty: Barry Waite and Bonnie Shrewsbury

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e-mail: bwaite@usc.edu

310 678-0094 (Shrewsbury)

e-mail: bonshrews@gmail.com

Office hours

By appointment at Lewis Hall or at instructor's offices off campus. We are happy to have calls or e-mails from students as needed and are very easy to reach!

Class Web site

Many of the readings as well as data files will be posted on-line on the instructor's web site. The URL is <https://barrywaite.org/usc-student/>. This site contains data files, links to data sources, additional information on class requirements and copies of the presentations used in class.

Materials are generally not posted to Blackboard since it is not possible to maintain files between semesters on that system. Please use the course web site above.

Course Description

The vast majority of information we work with includes a place, be it an address, street, path, GPS coordinate, region, or a neighborhood. Geographic information systems (**GIS**) give us a way to use that information for planning, organization, response and decision making.

Geographic information systems have become a vital tool for the public sector. This technology is used in almost every facet and level of government. At the national level, it is used extensively by the Census Bureau, Department of the Interior, Department of Homeland Security, Department of Defense, Environmental Protection Agency, and to a varying extent by every federal agency. Every state uses GIS. Most counties and cities are now using GIS as well, with applications from urban planning and infrastructure maintenance to economic development and 911 dispatch. What is lacking is a sufficient number of managers who know how to fully utilize the technology to meet the day to day needs of government.

This seminar course intends to introduce students to geographic information systems and their use in the public sector. The course features practitioners in various agencies discussing their use of GIS, demonstrations of the technology and **hands-on** use of the software for creating, displaying, manipulating, and analyzing spatial and tabular data. Lab sessions use ArcGIS Desktop version 10.x from Esri. While students will learn a good basic understanding of GIS software, the primary focus of the course is on **applying the technology** as a tool in public administration, particularly in local government. Although students will not be GIS experts by the end of the course, they will have gained immediately applicable skills and knowledge that will be important to them and the communities they serve. The course will also briefly touch on other uses of GIS in business to give students additional ideas on applying this vital technology in their own work.

Organization of the course is as follows:

Introduction and Concepts of GIS

Understanding the basics of GIS and spatial data

ArcGIS Lab Topics

- ArcMap Basics – zoom, pan, select, identify, bookmarks, labels
- Map Design – different map types, layer groups, scales, hyperlinks
- GIS Outputs – templates, layouts, reports, graphs, and exports
- Geodatabases – create, modify and use a geodatabase
- Spatial data – metadata, projections, data formats, tabular and image (raster) data
- Digitizing – create new point, line, and polygon features
- Geocoding – locate addresses
- Geoprocessing – extract features, clip, dissolve, append, ModelBuilder
- Spatial Analysis – proximity and site suitability

GIS Applications

SPEAKERS:

This course will use several practitioners as guest speakers to explain their use of GIS technology in the public sector. Presentations will be in class or on line.

FOCUS AREAS:

Economic development
Environment
Public works
Recreation
Historic conservation
Sustainability

Disaster planning and response
Planning
Public safety
Transportation
Housing

Preparation

Please complete any assignments for each module **prior** to the start of class times as assigned. The intensive class format is a seminar with extensive class discussions. Be prepared to engage the speakers to better understand how geospatial technology is impacting the practice of public administration. They are very open to discussing their work and their ideas. Many students have had speakers help them with data or ideas for their projects in the past, so your attention will be rewarded.

While there are no readings prior to the first course meeting, **the course software must be installed and ready to use at the first course meeting** as explained on page one. Additional handouts and case studies will be provided during the class. As with any graduate class, in responding to the needs, discussion, questions and emergent priorities of the class, the curriculum pace may be modified. Students with experience using GIS may be given more advanced lab assignments if desired and time permits.

Learning Objectives

- 1) Understand the basic concepts of geographic information systems.
- 2) Be able to gather data, analyze and present it using GIS.
- 3) Understand many applications of geospatial technology in the public sector.

Given the breadth and depth of the subject matter, this course will not cover GIS completely or make students proficient GIS users, but it will set them on the path to do so if they wish.

Course Requirements

- 1) **Class participation.** Discussions with practitioners about their use of GIS are the core of the course. Students will be expected to participate in these discussions.
- 2) **Lab** completion consists of exercises to be completed in class and at home. Assume one hour of home lab time assigned per class meeting to be completed prior to the next class meeting. The instructors will require some of these to be emailed in.
- 3) **GIS 20** lessons to be completed outside of class.
- 4) **Project:** Each student will develop a project using GIS for a real-world issue. The project will include problem definition, gathering data, analysis of the data, and maps or other output. In addition, there will be a written analysis describing the process, challenges and outcome. This will be discussed at the first course meeting. The instructors will provide assistance to the extent time allows. GIS is a cooperative field, so students are encouraged to help each other and learn from each other. The instructors will schedule an additional lab session for any students wanting hands on assistance with their projects. Details are on the course web site. **Note:** it is a requirement of this course that all projects be of “A” grade quality. Instructors will work closely with each student to ensure this happens. Students have found the requirement is entirely reasonable.
- 5) The final examination is an individual **reflections paper** of at least four pages describing the use of GIS technology in the public sector, what the student has learned in the class and suggestions for improving the course for future students.

Performance Evaluation

Participation in discussions and with guest lecturers	10%
Completion of labs	25%
Project demonstrating an understanding of the course	55%
Reflections paper (Final exam)	10%

Policy Regarding Disability Services and Programs

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open early 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](#).

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial

appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
eeotix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101
diversity.usc.edu

Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - (323) 442-3340 or otfp@med.usc.edu
chan.usc.edu/otfp

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

Faculty Biography

Barry Waite worked for the City of Carson 29 years where he served as Business Development Manager after having served several years as the city's Geographic Information Systems Administrator. He also worked in the city manager's office and as a city planner. In fact, he worked for every department in the city except recreation, although he did teach ceramics for the LA County Probation Department many years ago. Close enough. He now consults in the fields of economic development and GIS while serving as CEO of the Carson Chamber of Commerce.

He has a master's degree in public administration from USC and a GIS certificate from Cal State Long Beach. He is a city council member for the city of Lomita. He has taught a number of courses in the GIS certificate program at CSULB. He is the co-author of "The GIS Guide for Local Government," published by the International City and County Management Association.

Bonnie Shrewsbury, MA, is the GIS Manager for the City of Manhattan Beach. She has over 20 years of experience in the field of GIS and in municipal government, including having served as chair of the South Bay Cities GIS Working Group. Her background includes many years of database design and administration, research implementation, statistical analysis, and project management. Her light-duty worker program earned the city a Helen Putnam award from the League of California Cities. She has extensive experience teaching the use of ArcGIS software and previously taught in the Cal State Long Beach GIS certificate program.

The instructors have taught this course at USC since 2007.

Required Readings

ARTICLES [PROVIDED BY THE INSTRUCTOR OR DOWNLOADED FROM THE CLASS WEB SITE AT www.barrywaite.org/gis.htm]:

Sign up for "State & Local News" free newsletter from ESRI. Link is on the above web site. All of the articles below are available at <https://www.esri.com/en-us/industries/government/state-local-news>. Readings will be assigned at the first course meeting.

BOOK:

The GIS 20 Essential Skills, 3rd edition, ISBN: 978-1-58948-512-9 **This is a reference that can also be used outside of class. It includes a limited-term version of the software! This book will be used in class. Instructors will provide the email address to allow you to download the software and license. Spatial Sciences is located in the basement. Software MUST be loaded and ready to use at the first course meeting if possible.**