

## **SSCI 578, The Practice of Geospatial Leadership**

### *Syllabus*

**Units:** 4

**Term—Day—Time:** Summer, 2022, Tuesdays and Thursdays, 2:10 to 4:00 p.m.

**Location:** AHF 145A and DEN@Dornsife

**Instructor:** Dr. John P. Wilson

**Office:** AHF B55F

**Office Hours:** Mondays, 3-4 p.m. and Fridays, 4-5 p.m. PT, and by appointment at other times. I am always available asynchronously via email. I am also available for synchronous chats via audio or video most days and times *by prior arrangement* via email. Just get in touch!

**Contact Info:** [jpwilson@usc.edu](mailto:jpwilson@usc.edu), 213-740-1908 (office), see contact page on D2L for Webex or Zoom room

**Library Help:** Andy Rutkowski

**Office:** VKC 36B

**Office Hours:** Thursdays, 10 a.m. to 12 p.m.

**Contact Info:** [arutkows@usc.edu](mailto:arutkows@usc.edu), see contact page on Blackboard for Zoom room

**IT Help:** Richard Tsung

**Office:** AHF 145D

**Office Hours:** By appointment

**Contact Info:** [spatial\\_support@usc.edu](mailto:spatial_support@usc.edu), 213-821-4415 (office)

## Course Scope and Purpose

This course is a required for the M.S. in Human Security and Geospatial Intelligence and is the capstone course for the Graduate Certificate in Geospatial Leadership. The course serves those who aspire to or are considering a future leadership role and want to know what is involved as well as those already in a leadership role, who want to get better at it.

The first part of the course focuses on the fundamental challenges of leadership in the geospatial domain. We will start by examining the qualities and skills leaders need to help steer geospatial information management organizations so they can achieve extraordinary results, keeping in mind the various ways in which geospatial information management is changing and the pervasive trends that are driving at least some of these changes.

The second and final part of the course will focus on you, affording you the opportunity to reflect on your life and career by completing a life map and a series of self-assessments, culminating in a personal leadership development plan for the final project.

That said, this course covers six broad groups of topics:

*Key concepts* – We will use the first few classes to get everyone situated on where the spatial sciences are situated today.

*The geospatial value proposition* – We will next review the geospatial value proposition, identifying the multitude of ways in which geospatial information may add value to human activities, and clarifying some of the ways in which spatially-explicit data can be gathered, organized, and used to serve specific needs.

*Leadership Fundamentals* – We will then explore the range of qualities and skills that make for effective leadership using books by Sample, Kurtzman and the U.S. Department of the Army, and some you will find and choose yourselves. The Sample text focuses on the art of leadership and kicks off our exploration of this core topic. We will then spend the best part of a month reading the Kurtzman and U.S. Department of the army texts to help us grasp how a clear understanding and anticipation of the organizational context, an individual's personal leadership contribution, the role of teamwork, and the importance of new ideas along with leadership skills, can be harnessed and deployed so organizations can achieve extraordinary results.

*Leadership at Work* – We will use the 2022 Esri User Conference to take a close up look at one or more leaders who share long and/or distinguished records of leadership in the geospatial sector.

*The geospatial leadership value proposition* – We will also explore how to create spatial thinkers and a culture of geospatial understanding within an organization. The motivation here is to think bigger than most current geospatial users and to clarify how we might

teach the capabilities of spatial thinking and the use of geospatial technologies to all members of the organization.

*Current trends, future opportunities and threats* – We will then explore current trends in society as well as geospatial information management. We will consider some of the ways in which disruptive technologies (i.e., cloud computing, big data, data science, open science, reproducibility and replicability, among others) will affect the ways geospatial information is acquired, analyzed and used in the immediate future.

*Closing arguments* – The final class will take a look at why ideas matter and how some of the scientific and technological advances in the geospatial domain and society at large can generate, convert, and diffuse across an organization or firm to unleash a stream of valuable products, services, and businesses in the next few years and decades.

The class sessions and assigned readings will convey the main theoretical concepts, and the assignments will give students an opportunity to internalize and apply the concepts and theory learned from readings. Some assignments require student interaction, all will benefit from it.

### ***Learning Outcomes***

When you have completed this class, you will be able to:

- Describe the geospatial value proposition, identifying all of the ways in which geospatial information and spatial thinking can promote human well-being.
- Examine how leaders can help shape the context so that all involved will help geospatial information managers and organizations achieve extraordinary results.
- Assess the organizational culture and an individual's personal leadership contribution.
- Discuss why new and innovative ideas matter and how the various elements of a geospatial information management group or organization's innovation practices influence the successful generation, adoption, and deployment of new ideas.
- Develop a personal leadership plan and a vision for how geospatial information management is likely to grow and evolve in importance during the next 5-10 years.

**Prerequisite(s):** None

**Co-Requisite (s):** None

**Concurrent Enrollment:** None

**Recommended Preparation:** SSCI 585: Geospatial Technology Project Management

### **Class Conduct**

**Harassment, sexual misconduct, interpersonal violence, and stalking** are not tolerated by the university. All faculty and most staff are considered Responsible Employees by the

university and must forward all information they receive about these types of situations to the Title IX Coordinator. The Title IX Coordinator is responsible for assisting students with supportive accommodations, including academic accommodations, as well as investigating these incidents if the reporting student wants an investigation. The Title IX office is also responsible for coordinating supportive measures for transgender and nonbinary students such as faculty notifications, and more. If you need supportive accommodations you may contact the Title IX Coordinator directly (titleix@usc.edu or 213-821-8298) without sharing any personal information with me. If you would like to speak with a confidential counselor, Relationship and Sexual Violence Prevention Services (RSVP) provides 24/7 confidential support for students (213-740-9355 (WELL); press 0 after hours).

### **SSI server and tech support**

This course may or may not require the use of GIS and/or remote sensing software. In the event you do want or need to use these software tools, you may use the SSI Server that is a virtual desktop giving access to many different professional geospatial software applications. If you are unable to connect to the server or experience any type of technical issues, send an email to SSI Tech Support at spatial\_support@usc.edu and make sure to copy (cc) me on the email.

You will all need a computer with a fast Internet connection, a functional webcam and a microphone for use whenever a class presentation or one-on-one meeting is scheduled, and a modern web browser throughout the semester for this course.

### **Required Readings and Supplementary Materials**

There are four books required for this course. Some are available online and some are available from the USC Bookstore or an online outlet such as Amazon. We encourage you to acquire or purchase these books quickly since you need these materials from the first day of class.

- Kurtzman, J. 2010. *Common purpose: How great leaders get organizations to achieve extraordinary results*. San Francisco, CA: Jossey-Bass. [Available as an E-Book via USC Libraries]
- Sample, S. B. 2003. *The contrarian's guide to leadership*. San Francisco, CA: Jossey-Bass.
- U.S. Department of the Army. 2019. *ADP 6-22: Army leadership and the profession*. Washington, DC: U.S. Department of Army Headquarters.
- Wilson, J. P. 2022. *Spatial data science*. Redlands, CA: Esri Press (in preparation).

A mixture of readings from academic journals, monographs, and professional reports will supplement these books and course notes. I have added the following books, monographs and journal articles to the Course Documents folder in Desire to Learn (D2L):

- AlphaBeta. 2016. *The economic impact of geospatial services: How consumers, businesses, and society benefit from location-based information*. Sydney, NSW, Australia: AlphaBeta.
- Boston Consulting Group (BCG). 2012. *Putting the U.S. geospatial services industry on the map*. Boston, MA: BCG.
- Chrisman, N.R. 2017. Calculating in a round planet. *International Journal of Geographical Information Science*, 31, 637-657.
- Dangermond, J., Goodchild, M.F. 2019. Building geospatial infrastructure. *Geospatial Information Science*, 23(1), 1-9.
- Federal Geographic Data Committee (FGDC). 2020. *National Spatial Data Infrastructure Strategic Plan, 2021-2024*. Reston, VA: FGDC.
- Gahegan, M. 2018. Is our GIS too small? *Canadian Geographer*, 62, 15-26.
- Gahegan, M. 2020. Fourth paradigm GIScience? Prospects for automated discovery and explanation from data. *International Journal of Geographical Information Science*, 34, 1-21.
- Gebru, T., Krause, J., Wang, Y., et al. 2017. Using deep learning and Google Street View to estimate the demographic makeup of neighborhoods across the United States. *Proceedings of the National Academy of Sciences of the USA*, 114, 13108-13113.
- Geospatial Commission. (2022). *How FAIR are the UK's national geospatial data assets?* London, UK: Geospatial Commission.
- Gil, Y., Pierce, S.A., Babaie, H., et al. 2019. Intelligent systems for geosciences: An essential research agenda. *Communications of the ACM*, 62, 76-84.
- Goodchild, M. F. 2018. Reimagining the history of GIS. *Annals of GIS*, 24(1), 1-8.
- Kedron, P., Frazier, A.E., Trgovac, A.B., et al. 2021. Reproducibility and replicability in geographical analysis. *Geographical Analysis*, 53, 135-147.
- National Geospatial Advisory Committee (NGAC). 2015. *The changing geospatial landscape: A second look*. Washington, DC: FGDC.
- Open Data Institute (ODI). 2018. *The UK's geospatial data infrastructure: Challenges and opportunities*. London, UK: ODI.
- Oxera. 2013. *What is the economic impact of geo services? Report prepared for Google*. Oxford, UK: Oxera Consulting.
- Reichstein, M., Camps-Valls, G., Stevens, B., et al. 2019. Deep learning and process understanding for data-driven Earth system science. *Nature*, 566, 195-204.
- Robertson, C., Feick, R. 2018. Inference and analysis across spatial supports in the big data era: Uncertain point observations and geographic contexts. *Transactions in GIS*, 22, 455-476.
- Scott, G., Rajabifard, A. 2017. Sustainable development and geospatial information: A strategic framework for integrating a global policy agenda into national geospatial capabilities. *Geo-spatial Information Science*, 20, 59-76.

- Shekhar, S., Feiner, S.K., Aref, W.G. 2016. Spatial computing. *Communications of the ACM*, 59, 72-81.
- Shook, E., Bowlick, F.J., Kemp, K.K., et al. 2019. Cyber literacy for GIScience: Toward formalizing geospatial computing education. *Professional Geographer*, 71, 221-238.
- Singleton, A., Arribas-Bel, D. 2021. Geographic data science. *Geographical Analysis*, 53, 61-75.
- Walter, C. 2020. *Future trends in geospatial information management: The five to ten year vision* (Third edition). Southampton, UK: Ordnance Survey (for the United Nations Committee of Experts on Global Geospatial Information Management).
- World Geospatial Industry Council (WGIC). 2019. *Geospatial outlook for user industries*. Amsterdam, the Netherlands: WGIC.
- Wilson, J.P., Butler, K., Gao, S., et al. 2021. A five-star guide for achieving replicability and reproducibility when working with GIS software and algorithms. *Annals of the American Association of Geographers*, 111(5), 1311-1317.
- Wright, D.J., Harder, C. (Eds.) 2019. *GIS for science: Applying mapping and spatial analysis*. Redlands, CA: Esri Press.
- Yang, C., Clarke, K.C., Shekhar, S., et al. 2020. Big spatiotemporal data analytics: A research and innovation frontier. *International Journal of Geographical Information Science*, 34, 1075-1088.
- Zhu, A.-X., Zhao, F.-H., Liang, P., et al. 2021. Next generation of GIS: must be easy. *Annals of GIS*, 27(1), 71-86.

## Description and Assessment of Assignments

Several different assessment tools determine your grade in this course as follows:

*Exercises – 3 worth a total of 10 points.* The first will count for 2 points (out of a total of 100 points for the class as a whole) and requires students to post and maintain a public resume, short biography and recent photo on our shared Spatial Sciences Institute (SSI) Student Community Blackboard site. With your permission, your photo and short biographical sketch may be posted to the SSI website and your resume will be included in the SSI Resume Book. This exercise also will be used to share your career trajectories with one another. For the second exercise, which will count for 4 points, students will fill out a self-assessment of their own strengths and weaknesses. For the third and final exercise, which also counts for 4 points, students will prepare life maps and the Blackboard course site, soon thereafter, will include a "gallery of lives" during which all life maps will be on display for a short period.

*Presentation – 1 worth 10 points.* This presentation will follow the gallery of lives and afford each of you an opportunity to tell your story in a small (virtual) group. Please note that there is a second presentation that is part of your final projects (as described below).

*Reflections – 10 for a total of 50 points.* Taking time for reflection provides one of the most important opportunities in learning from experience. For this part of the course, we

will ask you to reflect on what was said and/or read, and then write 10 short papers (four-page maximum, typed using a 12-point font, single spacing, and standard margins). Your answers will respond to two sets of prompts. The first set will ask you about the significance and implications of the topics covered that week and the second set will ask you of identify two things you learned that were important to you, explain why these things were important to you, and draw some implications for your future actions.

### *Final Project*

The final project will provide you the opportunity to craft a personal plan for the next phase of your growth as a leader. The final report and accompanying presentation should draw on material from the entire course. You may want to include in appendices self-assessments, your life map, etc., so hang on to them, and you may also want to include materials from outside the course that you consider relevant, such as past performance evaluations or advertisements documenting the kind of position you aspire to apply for in the near future. The two components of the final project are:

*Presentation – 1 worth 5 points.* This (second) presentation will provide students with an opportunity to present and discuss their final projects.

*Project Report – 1 worth 25 points.* A written report detailing your personal plan and the various materials and threads you used to develop this plan.

## **Grading Breakdown**

Careful planning and a serious, consistent commitment will be required for you to navigate the various deliverables in this course. The table below summarizes the SSCI 578 course assignments and their point distribution.

<b>Assignment</b>	<b>Number</b>	<b>Points Each</b>	<b>Points</b>
Exercises	3	2-4	10
Presentation	1	10	10
Reflections	10	5	50
<b>Final Projects</b>			
Presentation	1	5	5
Final report	1	25	25
<b>TOTALS</b>	<b>16</b>	<b>--</b>	<b>100</b>

In addition, it is important to note from the outset that:

- You are expected to attend and participate in every class session and to complete and upload all assignments before the deadlines documented in the Course Schedule. The move of this SSCI 578 to the DEN model means that you may participate in-person or remotely and synchronously or asynchronously – you will choose the modalities to fit your own circumstances and therefore participate in each class session in one or other combinations of these modalities (i.e., in-person and synchronous, remote and synchronous, or remote and asynchronous).

- I will deduct one letter grade for late postings and assignments, and no credit will be assigned for postings or assignments turned in more than one week late.
- No written work will be accepted for grading after 11:59 p.m. PT on the last day of classes (i.e. Friday, August 12<sup>th</sup>, 2021).

## Assignment Submission Policy

You will submit assignments for grading via Blackboard using the due dates specified in the Course Schedule below.

## Workload

This is a four-credit, one-semester course. Students should expect to spend 12-15 hours per week completing the work in this course.

## Course Schedule

Dates	Topics/Daily Activities	Readings	Deliverables/Due Dates (PT)
<b>Module 1   Key Concepts</b>			
5/19	Introduction to class		Submit Exercise #1 before 11:59 p.m. on Tuesday, 5/23
5/24	A short history of the spatial sciences	Goodchild (2018) Dangermond & Goodchild (2019)	Submit Reflection #1 before 11:59 p.m. on Tuesday, 5/31
5/26	The spatial sciences ecosystem today	Wright & Harder (2019)	
5/31	Leveraging the power of place, space, and time to build spatial science careers	Wilson (2022, Ch. 2)	Submit Reflection #2 before 11:59 p.m. on Tuesday, 6/7
<b>Module 2   The Geospatial Value Proposition</b>			
6/2	Private sector perspectives	BCG (2012) Oxera (2013) AlphaBeta (2016)	
6/7	U.S. federal government perspectives	NGAC (2015) FGDC (2020)	Submit Reflection #3 before 11:59 p.m. on Tuesday, 6/14
6/9	UK perspectives (Part I)	ODI (2018)	
6/14	UK perspectives (Part II)	Geospatial Commission (2022)	Submit Reflection #4 before 11:59 p.m. on Tuesday, 6/21
<b>Module 3   Leadership Fundamentals</b>			
6/16	The art of leadership	Sample (2003)	
6/21	The organizational context (Part I)	Kurtzman (2010, Ch. 1-4)	Submit Exercise #2 before 11:59 p.m. on Tuesday, 6/28
6/23	The organizational context (Part I)	U.S. Department of the Army (2019, Ch. 1-2)	
6/28	Role of teamwork (Part I)	Kurtzman (2010, Ch. 5-8)	Submit Reflection #5 before 11:59 p.m. on Tuesday, 7/5

6/30	Role of teamwork (Part II)	U.S. Department of the Army (2019, Ch. 3-5)	
7/5	How to lead (Part I)	Kurtzman (2010, Ch. 9-12)	Submit Reflection #6 before 11:59 p.m. on Tuesday, 7/12
7/7	How to lead (Part II)	U.S. Department of the Army (2019, Ch. 6-11)	
7/12	2022 Esri User Conference: Getting up close and personal with geospatial leaders		Submit Reflection #7 before 11:59 p.m. on Tuesday, 7/19
7/14	Why ideas matter and the geospatial value proposition	Kurtzman (2010, Ch. 13)	
<b>Module 4   Current Trends, Future Opportunities and Threats</b>			
7/19	Cloud computing	Gahegan (2018) Wilson (2022, Ch. 3) Zhu et al. (2021)	Submit Exercise #3 and Reflection #8 before 11:59 p.m. on Tuesday, 7/26
7/21	Big data	Shekhar et al. (2016) Wilson (2022, Ch. 3)	Schedule Presentation #1 before 5:00 p.m. on Friday, 7/29
7/26	Big geospatial data	Gahegan (2020) Wilson (2022, Ch. 4)	Submit Reflection #9 before 11:59 p.m. on Tuesday, 8/2
7/28	Data science	Gil et al. (2019) Reichstein et al. (2019) Robertson & Feick (2018) Singleton & Arribas-Bel (2021) Yang et al. (2020)	
8/2	Open science	Wilson (2022, Ch. 3)	Submit Reflection #10 before 11:59 p.m. on Tuesday, 8/9
8/4	Future trends in geospatial information management	Chrisman (2017) Gebru et al. (2017) Shook et al. (2019) Scott & Rajabifard (2017) Walter (2020) WGIC (2019)	Complete Presentation #2 before 5:00 p.m. on Friday, 8/13
8/9	Replicability and reproducibility in the spatial sciences	Kedron et al. (2021) Wilson et al. (2021)	Submit Final Report before 11:59 p.m. on Friday, 8/13
8/11	Closing arguments		

## 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](http://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](http://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu)

### ***Support Systems***

*Counseling and Mental Health* – (213) 740-9355 – 24/7 on call  
[studenthealth.usc.edu/counseling](http://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](http://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](http://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  
[eetix.usc.edu](http://eetix.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](http://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](http://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), or

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, [otfp@med.usc.edu](mailto:otfp@med.usc.edu), or

[chan.usc.edu/otfp](http://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.

### ***Resources for Remote Students***

The Course D2L page and Spatial Sciences Community D2L page have many resources available for remote students enrolled in our graduate programs. In addition, all registered students can access electronic library resources through the link <https://libraries.usc.edu/>. Also, the USC Libraries have many important resources available for distance students through the link: <https://libraries.usc.edu/faculty-students/distance-learners>. These include instructional videos, remote access to university resources, and other key contact information for distance students.