USC Dornsife
Dana and David Dornsife
College of Letters, Arts and Sciences
Spatial Sciences Institute

SSCI 581 (35691D and 35892D), Concepts for Spatial Thinking

Syllabus

Units: 4

Term Day Time: Fall 2025 – Tue and Thu 3:00-4:50pm PT

Location: AHF 145A/D and DEN@Dornsife

Instructor: Siqin (Sisi) Wang, PhD
Office: AHF B57C
Regular Office Hours: Tue and Thu 2:00am-3:00pm PT in-person or via zoom – please contact me via email in advance to ensure I will be available in the format you'd wish to meet.
Contact Info: siqinwan@usc.edu; (213) 821-1466, see contact page on Brightspace for the Zoom link

Library Help: Andy Rutkowski
Office: LIPA B40-A
Office Hours: By appointment
Contact Info: arutkows@usc.edu see contact page on D2L for Zoom Room

IT Help: Spatial Support
Contact Info: spatial_support@usc.edu Pls make sure to cc any IT email to the course instructor, Professor Sisi Wang.

Course Scope and Purpose

SSCI 581: *Concepts for Spatial Thinking,* is an introduction to geographic information science and spatial reasoning. Spatial science is an enabling discipline and thus, the course domain is inherently comprehensive, multi-disciplinary, collaborative, and pertinent to problem solving in a wide range of academic and professional fields.

The course is designed to serve many audiences within the Spatial Sciences Institute and across the USC campus. It is the foundational spatial science course for six Master's programs[1] and three graduate certificate programs[2]. To serve a range of academic objectives, students are provided with a variety of options in course topics and assignments so they can align with their own academic and professional goals.

The course is also designed for any student who wishes to improve their GIS skills and understand the concepts underlying GIS analysis. Students will leave the course understanding the theoretical underpinnings of the field of spatial science.

Fundamentals of GIS – The course provides a core foundation in the evolving field of geographic information science. We explore geographic information science and its applicability to a variety of fields, such as transportation, human security, geospatial intelligence, spatial data science, public health, economics, land use planning, geodesign, environmental science and management, spatial science, archaeology, and the humanities.

Spatial Data– The ability to understand and analyze data sets is an essential component of spatial thinking, reasoning, and application. Students will investigate fundamental geospatial datasets and attain the knowledge and skills necessary for processing, interpreting, and analyzing GIS data. Students will also learn how to find, clean, and merge data sets and vet them for quality.

Spatial Thinking – Location is critically important in contemporary society and a spatial perspective can be applied to nearly every topic area. The course will use readings, discussions, and a variety of case studies to demonstrate the importance of spatial thinking in describing, analyzing, modeling, and visualizing the world, and how one can cultivate the habit of thinking spatially.

Geodesy – Geodesy is the branch of science concerned with the size and shape of the Earth and determining precise locations on its surface. This includes geodetic datums, geoids, coordinate systems, and map projections. Understanding what geodesy is and how it underlies the successful deployment and use of spatial technologies separates a novice GIS practitioner with one who is more advanced.

Maps – Maps communicate the findings of spatial analysis and have been employed throughout history to make sense of geographic concepts. The course will review past, present, and future

[1]The M.S. in Geographic Information Science & Technology (GIST), the M.S. in Human Security and Geospatial Intelligence, the M.S. in Spatial Data Science, the M.S. in Spatial Economics and Data Analysis, the M.S. in Transportation Systems Management, and the GeoHealth track of the MPH

[2]The GIST and Geospatial Intelligence Graduate Certificates, and the GeoHealth track in the Keck School of Medicine's Master of Public Health program

map use and creation, and explore how maps depict and transmit geographic knowledge in the digital age. Students will gain expertise in designing clear, communicative maps that meet professional standards.

The ArcGIS Ecosystem – Esri's ArcGIS suite is a powerful, industry-standard software that can be used to analyze spatial questions and visualize the outcomes. All students in this course learn how to independently use ArcGIS to solve real-world spatial questions.

At the graduate level, students are responsible for their own learning. The instructor's role is as a guide on the path of academic exploration, and students will be rewarded through active engagement with both the material and with their fellow classmates. Instructors provide a robust, challenging, and stimulating academic experience within the broader milieu of the digital era.

Core theoretical concepts will be presented via lectures, videos, and assigned readings, and augmented with active learning exercises and project work. Written assignments will give students the opportunity to analyze and apply the concepts and theories learned from the readings. Projects will primarily use Esri's ArcGIS Pro.

Learning Outcomes

On completion of this course, students should be able to:

- Summarize, interpret, and utilize fundamental spatial concepts such as orientation, projections and transformations, interpolation, dispersion, and pattern.
- Examine how maps have been used throughout history to organize and empower different groups of people and anticipate the evolution of maps in the future.
- Illustrate the role and importance of geodetic datums, geoids, coordinate systems, and map projections for identifying the position and the location of places, people, and features on the Earth's surface when conducting spatial analysis.
- Describe the spatial analysis, modeling, and visualization tools included in geographic information systems and how geospatial technologies can advance knowledge creation and communication across a variety of academic disciplines and professional fields.
- Examine, analyze, and manipulate core geospatial datasets from a wide range of fields to answer original questions for real-world decision support.
- Apply appropriate academic protocol with respect to research and writing.
- Apply spatial thinking and cartographic principles in the mapping and visualization of spatial data.

Students may vary in their competency levels on these abilities. You can expect to acquire these abilities only if you honor all course policies, attend classes regularly, complete all assigned work in good faith and on time, and meet all other course expectations of you as a student.

Prerequisite(s): None
Co-Requisite(s): None
Recommended Preparation: None

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.

Diversity and Inclusion – It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful to everyone, and you are also expected to respect of others regardless of their race, ethnicity, gender identity and expressions, cultural beliefs, religion, sexual orientation, national origin, age, abilities, ideas and perspectives, or socioeconomic status. Your suggestions are encouraged and appreciated. Feel free to let me know ways to improve the effectiveness of the course for you personally or for other students.

Generative AI tools – All work should be original and created specifically for the given assignment. You are responsible for the accuracy and originality of any material submitted. You should be the authors of all text submitted. In assignments that are collaborative in nature, that group of students will be the co-authors and have all associated responsibilities. Academic integrity policies regarding the use of generative AI tools will apply to every assignment. The extent to which using a generative AI tool is appropriate will be identified for specific assignments. Please note that such use may differ for each assignment. Any generative AI text should be treated as source material and should be appropriately cited. In other words, if someone else (or something else) wrote the text, a citation is necessary. You will be asked to further cite not just the source, but how you used these tools. This extra step is reflective of future professional standards and responsibilities. Any generative AI image or graphic should be appropriately cited.

Course Structure

The course is taught in a hybrid modality (depending on your section) with class meetings split between presentations and discussions of the assigned readings and any questions and related topics that arise from the readings. Depending on your section registration and requirements, students attend class sessions in person or participate in the course remotely/ asynchronously (DEN@Dornsife). Additional readings will be assigned to expand on the text (*GIS Fundamentals: A First Text on Geographic Information Systems,* 7th ed) when needed. Technical work

throughout the semester focuses on a variety of use cases and is presented via projects utilizing materials and data provided by the instructor, as well as data acquired independently by the students. These projects allow students to demonstrate their ability to apply spatial concepts and tools in an appropriate, informed manner.

Workload – This is a four credit, one semester course graduate course. Students should expect to dedicate 10-15 hours per week to this course.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. (Living our Unifying Values: The USC Student Handbook, page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposed other than individual or group study is prohibited. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which has been distributed to students or in any way has been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. (Living our Unifying Values: The USC Student Handbook, page 13).

Technological and Communication Requirements

ArcGIS Pro is provided online via the SSI Server (via a virtual machine); hence, students do not need to install it on their own computer. Instead, every student must have the following technology requirements:

- A computer with a fast internet connection
- A functional webcam and a microphone
- An up–to-date-web browser to access the SSI server

If a student does not have access to any of these, please speak with the instructor at the start of the semester. And see the USC ITS Student Toolkit here: https://keepteaching.usc.edu/students/student-toolkit/

Brightspace – This course will utilize the Desire2Learn (D2L) learning management system which allows students to access course content, upload assignments, and participate in discussion forms, among other learning experiences. The D2L platform provides flexibility in the learning experience where students can participate in the course residentially or remotely, synchronously (meeting together at the same time) or asynchronously (accessing videos and course content outside of class).

SSI Server and Tech Support – This course utilizes the SSI Server, which is a virtual desktop that allows access to different types of professional software. If students are unable to connect to the server or experience technical issues, they should send an email (via their USC account) to SSI Tech Support at spatial_support@usc.edu, making sure to copy (cc) the instructor on the email. Assignment specific questions should be directed to the instructor.

Communications – All assignments disseminated and all materials to be handed in will be submitted via D2L. The instructor will also create and monitor discussion forums through which students can discuss issues and assignments as needed. Students should read all email sent from D2L or from course instructor as soon as possible. Also, students who do not regularly use their USC email accounts should double-check to be sure that mail sent from both the D2L accounts and the instructor's account (noted above) to your USC account is forwarded to an address used regularly and does not go into junk mail. The instructor will endeavor to respond to all email within 24 hours of receipt, aiming for no more than 72 hours delay. In the rare case that an instructor is off-line for an extended period of time, an announcement will be posted to the class D2L site. Due to the synchronous and asynchronous nature of this course, it is each student's responsibility to stay informed and connected with others in our course. In addition to email, students are expected to login to D2L regularly to check for announcements.

Discussion forums – Discussion forums provide a key means for student-to-student discussion and collaboration that can replicate the face-to-face contact you may have experienced in traditional classrooms. Here students can provide support to each other while working on your assignments, sharing hints and helpful tips (but not final work products), as you would in a classroom laboratory. Please post your questions about assignments there, as you would ask them publicly in the classroom. I monitor the discussion threads and offer comments, when necessary, but more importantly, consider the discussion board a key way to connect with your classmates and share your discoveries.

Required Readings and Supplementary Materials

The required textbooks for this course are:

- Bolstad, P. and S. Manson. 2022. *GIS Fundamentals: A First Text on Geographic Information Systems*. 7th ed. Acton, MA: XanEdu. This text is available as an e-book for rent or purchase at: https://www.redshelf.com/app/ecom/book/2057301/gis-fundamentals-a-first-text-on-geographic-information-systems-2057301-9780971764767-paul-bolstad.
- Law, M. and Collins, A. 2024. *Getting to Know ArcGIS Pro 3.2*. Redlands, CA: Esri Press. Available for rent or purchase at: https://www.esri.com/en-us/esri-press/browse/getting-to-know-arcgis-pro-3-2?srsltid=AfmBOorG_itgblnZ7GrZOF3a6nTzxMssJl3Dsbgo53AQCU1NwG7XBIyY

Supplementary readings will be assigned from various sources including but not limited to:

- Bamutaze, Y. 2019. Morphometric conditions underpinning the spatial and temporal dynamics of landslide hazards on the volcanics of Mt. Elgon, Eastern Uganda. In *Emerging Voices in Natural Hazards Research*. Edited by Rivera, F.I. Oxford: Elsevier, pp. 57-81.
- Biehl, A., A. Ermagun, and A. Stathopoulos. 2018. Community mobility MAUP-ing: A socio-spatial investigation of bikeshare demand in Chicago. *Journal of Transport Geography*, 66, 80-90.
- Bodenhamer, D.J. 2015. Narrating Space and Place. In *Deep Maps and Spatial Narratives*. Edited by Bodenhamer, D.J., Corrigan, J. and Harris, T.M. Bloomington: Indiana University Press, pp. 7–27.
- Clarke, K.C., J.M. Johnson, and T. Trainor. 2019. Contemporary American cartographic research: a review and prospective. *Cartography and Geographic Information Science*, 46(3), 196-209.
- Harley, J.B. 2001. The New Nature of Maps: Essays in the History of Cartography. Baltimore, MD: The Johns Hopkins University Press, Chapter 2.
- Huang, B. and J. Wang. 2020. Big spatial data for urban and environmental sustainability. *Geo-spatial Information Science*, 23(2), pp. 125-140.
- Kanevski, M. 2013. *Advanced Mapping of Environmental Data*. Hoboken, NJ: John Wiley & Sons.
- Kimerling, A.J., A.R. Buckley, P.C. Muehrcke, and J.O. Muehrcke. 2016. *Map Use: Reading, Analysis, Interpretation*, 8th Ed., Redlands, CA: Esri Press.
- Levy, B.L., N.E. Phillips, and R.J. Sampson. 2020. Triple disadvantage: Neighborhood networks of everyday urban mobility and violence in US cities. *American Sociological Review*, 85(6), pp. 925-956.
- Leyk, S., A.E. Gaughan, S.B. Adamo, A. de Sherbinin, D. Balk, S. Freire, … and M. Pesaresi. 2019. The spatial allocation of population: a review of large-scale gridded population data products and their fitness for use. *Earth System Science Data*, 11, 1385-1409.
- Logan, John R. 2012. Making a Place for Space: Spatial Thinking in Social Science. *Annual Review of Sociology*. 38 (August). doi:10.1146/annurev-soc-071811-145531
- Marx, A. 2017. Using satellites to detect mass human rights violations. In *Last Lectures on the Prevention and Intervention of Genocide*. Edited by Totten, S. NY: Routledge. Ch. 23.
- Miller, H.J., and M.F. Goodchild. 2015. Data-driven geography. *GeoJournal* 80(4), 449-461.
- Salas-Olmedo, M.H., B. Moya-Gómez, J.C. Garcia-Palomares, and J. Gutiérrez. 2018. Tourists digital footprint in cities: Comparing Big Data sources. *Tourism Management*, 66, pp. 12-25

- Salathé, M., L. Bengtsson, T.J. Bodnar, D.D. Brewer, J.S. Brownstein, C. Buckee,…and A. Vespignani. 2012 Digital epidemiology. *PLoS Computation Biology*, 8(7), p.e1002616.
- Sayre, N. 2005. Ecological and geographical scale: Parallels and potential for integration. *Progress in Human Geography*, 29(3), 276–290.
- Schuurman, N. 2004. *GIS: A Short Introduction*. Oxford: Blackwell, Chapter 1.
- Senaratne, H., Mobasheri, A., Ali, A.L., Capineri, C. and Haklay, M. 2017. A review of volunteered geographic information quality assessment methods. *International Journal of Geographical Information Science*, 31(1), 139-167.
- Steiniger, S. and Hunter, A.J. 2013. The 2012 free and open source GIS software map – A guide to facilitate research, development, and adoption. *Computers, Environment and Urban Systems*, 39, 136-150.
- van Oort, P.A.J. 2006. *Spatial Data Quality: From Description to Application*. Thesis. Wageningen University. Rotterdam, Netherlands.
- Verplanke, J., McCall, M.K., Uberhuaga, C., Rambaldi, G. and Haklay, M. 2016. A shared perspective for PGIS and VGI. *The Cartographic Journal*, 53(4), 308-317.
- Warf, B. and Sui, D. 2010. From GIS to neogeography: Ontological implications and theories of truth, *Annals of GIS*, 16(4), 197-209.
- Zhang, X., Xu, Y., Tu, W. and Ratti, C. 2018. Do different datasets tell the same story about urban mobility — A comparative study of public transit and taxi usage. *Journal of Transport Geography*, 70, 78-90.

Description and Assessment of Assignments

There are different types of assignments, which are described in detail in the instructions posted to D2L.

Resume Assignments – 2 worth a total of 5 points. In addition to the submission via D2L, all students are required to post and maintain a public resume, biography, and headshot on the SSI Student Hub on D2L. Unless a student opts out, their resume will be included in the Spatial Sciences Institute Graduate Programs Resume Book, which is used to promote the program and highlight student skills, experiences, and professional aspirations. An updated resume will be submitted at the end of the course of study.

Projects – 5 worth a total of 45 points. The projects will be the major tool used to evaluate your learning in this course. The projects will be linked to course Modules. In support of these projects, students will complete some ArcGIS tutorials so that they are familiarized with the analytical capabilities of ArcGIS Pro and apply their proficiencies to problem-solving scenarios. Students will gain GIS skills from completing portions of the Law and Collins' *Getting to Know ArcGIS Pro* workbook and Esri web courses. In this, they will solve basic research questions, while reading, thinking, and writing about GIS projects.

Reading and Research Discussions – 5 worth a total of 20 points. These assignments call on students to critically analyze required readings, identify relevant case studies employing the methodologies and concepts we cover in class, and to discuss them with the instructor and their classmates during synchronous meetings and/or online discussion forums via D2L. Critical thinking questions provide students an opportunity to apply their competencies to exploratory, open-ended scenarios and support spatial thinking problem solving.

Mid-Term Exam – 1 worth of a total of 10 points. The mid-term will cover material learned in the first half of the term. It may be mixed format and may consist of multiple choice, short answer, and simple problem questions.

Final Exam – 1 worth a total of 20 points. The final exam will cover material learned over the duration of the term. It may be mixed format and may consist of multiple choice, short answer, and simple problem questions.

Grading Breakdown

Careful planning and a serious, consistent commitment will be required for students to successfully navigate the deliverables in this and other SSCI courses. The table below summarizes the SSCI 581 course assignments and their point distribution:

Assessment	Number	Points Each	Total Points
Resume Assignment 1	1	2	2
Project 1	1	5	5
Projects 2-5	4	10	40
Reading and Research Discussions	5	4	20
Resume Assignment 2	1	3	3
Mid-Term	1	10	10
Final	1	20	20
Total	14	-	100

Grading Scale

Assignments in this and other SSCI courses, are graded on the letter grade scale where A is exemplary, B is very good, C is satisfactory, D is unsatisfactory, and F needs improvement. Final grades use the same letter grade scale with C being the minimum passing grade for credit at the graduate level. The grading scale follows:

A	> 93 points		B-	80-82 points		D+	67-69 points
A-	90-92 points		C+	77-79 points		D	63-66 points
B+	87-89 points		C	73-76 points		D-	60-62 points
B	83-86 points		C-	70-72 points		F	<60 points

Assignment Submission Policy

Assignments must be submitted via D2L by the due dates specified in the Course Schedule. Attention to on-time assignment submission is essential. The instructor will aim to return feedback before the next assignment is due.

Strict penalties apply for late assignments as follows:

- All assignments will be penalized 2 points/day up to four days late. No points will be given for submissions more than four days late.
- Additionally, no written work will be accepted for grading after 5 p.m. PT on the last day of classes.

Schedule

Week	Topic	Assignments & Readings	Deliverables/Due Dates
Module 1: Introduction to Spatial Thinking			
Week 1 8/26	**1 Introduction to Course and GIS** Introduction to class and use of geographic information systems	**Resume Assignment 1** Bolstad and Manson, Ch, 1 (2022) SSCI 581 Syllabus How to Read Like a Graduate Student USC Writing Center Resume Guides	
8/28	**2 Fundamental Concepts and Key Terms** The important keywords and ideas that underlie spatial reasoning; Introduction to ArcGIS Pro and the SSI Server	**Project 1** Chen et al. (2020) Østhagen (2021)	
Week 2 9/2	**3 Spatial Data Models** An introduction to vector, raster and other data models plus data and file structures	**RRD 1** Bolstad, Ch. 2 (2022) Bolstad, Ch. 4, p 147-152	
9/4	**4 Basics of Spatial Data Handling** Relational databases and the difference between spatial and non-spatial information.	Avitt (2024) USDA (2023)	
Week 3 9/9	**5 Basics of Cartography** Best practices for creating finished mapping products**;** Cartographic principles and methods for visualizing spatial data online	Bolstad, Ch. 4, (pp. 168-175) Kimerling, Ch. 6 (2016) USC Student Handbook p. 9-11, 29-38 DiBiase (2017)	Resume Assignment 1 – Due Friday 9/12
9/11	**6 Academic Standards for the Spatial Sciences** Creating appropriate map layouts, ethical conduct, writing papers, citations and bibliographic managers, university resources.	Field & Dorling (2016)	
Module 2: Spatial Data Considerations			
Week 4 9/16	**7 Geodesy, Datums, and Geographic Coordinate Systems** Role of geodesy and datums in studying and communicating our three-dimensional world **RRD 1 Synchronous Discussion**	**RRD2** Bolstad, Ch. 3 (2022) Bolstad, Ch. 15 (pp. 634-635)	RRD 1 – Due 9/15 and 9/19

Week	Topic	Assignments & Readings	Deliverables/Due Dates
9/18	**8 Map Projections** An introduction to the effects of depicting the three-dimensional world in two dimensions.	Dykes (2020) Lucchitta and Ferguson (1986)	Project 1 – Due Friday 9/19
Week 5 9/23	**9 Role and Importance of Scale** Introduction to the key geographic concept of scale and its importance to the real-world spatial processes and the study of them.	**Project 2** Sayre (2005) 7 Principles of Highly Effective Writing	
9/25	**11 Spatial Data Quality and Metadata** Methods for assessing the quality and utility of spatial data and the importance of metadata in light of various methods for collecting spatial data Geolocation systems and uses **RRD 2 Synchronous Discussion**	**RRD3** Bolstad Ch. 14 (2022) Bolstad, Ch. 7, (pp. 300-321)	RRD2 - Due 9/24 and 9/28
Week 6 9/30	**12 Spatial Data Management** The importance of attribute information associated with coordinates, tables, and options for storing spatial data	Leyk et al. (2019) Ablondi et al. (2019)	
10/2	**13 Vector Overlay Functions** Basic methods for using vector layers to explore spatial patterns and make decisions	Bolstad, Ch. 8 (2022)	
Module 3: Spatial Approaches to Data Analysis			
Week 7 10/7	**14 Density Analysis** Exploring the logic of spatial density and its application in spatial analysis.	Logan (2012) Bolstad, Ch. 9 (2022)	
10/9	**No Class *10/9-10 is Fall Recess**		
Week 8 10/14	**15 Distance Analysis** Introduction to various types of distance and their use in spatial analysis	**Project 3** Thompson et al. (2022)	Project 2 – Due Friday 10/17
10/16	**Mid-Term Exam**		
Week 9 10/21	**16 Spatial Analysis with Raster Data** The concept of map algebra and basic raster (local, zonal, global) functions and multicriteria decision analysis. **RRD 3 Synchronous Discussion**	**RRD4** Bolstad, Ch. 10 (2022) Bolstad, Ch. 11	RRD 3 - Due 10/20 and 10/24
10/23	**17 Terrain Analysis and Site Selection** Land surface parameters and modeling terrain	Bamutaze (2019)	
Module 4: Creating Actionable Information			
Week 10 10/28	**18 Spatial Modeling** Agent-based modeling, maximum entropy, and more.	Bolstad, Ch. 5 (2022) Ch. 15 (pp. 627-633)	
10/30	**19 Global Navigation Satellite Systems** Geolocation systems and uses	**Project 4** Ioannidos et al. (2024)	Project 3 – Due Friday 10/31

Week	Topic	Assignments & Readings	Deliverables/Due Dates
Week 11 11/4	**20 Aerial and Satellite Imagery** Introduction to passive and active remote sensing systems and the data they produce	Bolstad, Ch. 6 (2022) Ch. 15 (pp. 636-638)	
11/6	**21 Remote Sensing Applications** The various ways RS can improve locational intelligence including composite indices and machine learning classification **RRD 4 Synchronous Discussion**	**RRD5** Parcak (2013) Kaimaris (2024)	RRD 4 – Due 11/5 and 11/9
Week 12 11/11	**No Class *Tuesday, 11/11 is university holiday (Veterans Day)**		
11/13	**22 Spatial Estimation and Interpolation** Introduction to sampling and spatial interpolation methods	Salathé et al. (2012) Long (2017) Shi (2019)	
Module 5: Future of GI Science			
Week 13 11/18	**23 Partitioning and Service Areas** Strategies for dividing space and allocating demand to various types of facilities	Shukla et al. (2020) Parvin et al. (2021)	
11/20	**24 3D Modeling and Automation** Introduction to modeling and navigating our world with 3D spatial data and GIS and platforms and processes for automating spatial analysis.	**Project 5** Huang (2020) Quinn (2018) Radford (2024)	Project 4 – Due Friday 11/21
Week 14 11/25	**25 GIS Customization and Cloud Services** GIS in the cloud and programming languages for customizing spatial workflows	**Resume Assignment 2** Franzini et al. (2024) Althani and Xu (2023) World Econ. Forum (2023) Sukwai et al. (2022)	
11/27	**No Class *11/26-11/28 is a university holiday (Thanksgiving)**		
Week 15 12/2	**26 Volunteered Geographic Information and Big Data Application** Introduction to methods for collecting spatial data from non-professionals and the benefits and drawbacks of doing so; the variety of data created by widespread ownership and use of location-based services **RRD 5 Synchronous Discussion**	Verplanke et al.(2016) Bodenhamer (2015) Enemark et al. (2021) Percel (2024) Reid and Sieber (2022) Salas-Olmeo et al (2018) Huang and Wang (2020)	RRD5 – Due 12/1 and 12/5
12/4 *Friday, 12/5 is the last day of class	**27 Looking Forward for GIS and Exam Review** The changing character and impact of GI science, systems, and services in the spatial humanities; Class wrap-up and review for final exam	Miller & Goodchild (2015) Lunga (2019)	Resume Assignment 2 and Project 5 – Due Friday 12/5
12/6-12/9	**No class: study days**		
12/10-12/17	**Final Exam following the university schedule**		

Statement on Academic Conduct and Support Systems

Academic Integrity

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others (including AI generated) or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the student handbook or the Office of Academic Integrity's website, and university policies on Research and Scholarship Misconduct.

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

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

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

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

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

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

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 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) 740-0411

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

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

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) 442-1200 – 24/7 on call

Non-emergency assistance or information.

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

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) 442-2850 or otfp@med.usc.edu

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

Resources for Online Students

The Course D2L page and the SSI Student Hub on D2L have many resources available for distance 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.