

## **SSCI 581 (35691), Concepts for Spatial Thinking**

### *Syllabus*

**Units:** 4

**Term — Day — Time:** Fall 2022 – Mondays and  
Wednesdays 11:00 am – 12:50 pm PT

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

**Instructor:** Laura C Loyola, PhD

**Office:** AHF B55C

**Regular Office Hours:** Mon 2-3 p.m. and Thurs 11-12 p.m.  
PT. Also available by appointment via email.

**Contact Info:** [loyola@usc.edu](mailto:loyola@usc.edu), 213-740-5612

**Library Help:** Andy Rutkowski

**Office:** LIPA B40-A

**Office Hours:** Thursdays 10 a.m.-12 p.m. PT or by  
appointment

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

**IT Help:** Dornsife Technology Services

**Office:** SHS 260

**Contact Info:** [spatial\\_support@usc.edu](mailto:spatial_support@usc.edu), 213-740-2775

## Course Scope and Purpose

SSCI 581: *Concepts for Spatial Thinking*, is an introduction to geographic information science and spatial reasoning. Spatial is an enabling discipline. 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 five distance-learning programs<sup>1</sup> and three residential programs<sup>2</sup>. 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. The course explores 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.

*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.

*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

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<sup>1</sup>The M.S. in Geographic Information Science & Technology (GIST), the M.S. in Human Security and Geospatial Intelligence, the GIST and Geospatial Intelligence Graduate Certificates, and the GeoHealth track in the Keck School of Medicine’s Master of Public Health program

<sup>2</sup>The M.S. in Spatial Data Science, the M.S. in Spatial Economics and Data Analysis, and the M.S. in Transportation Systems Management

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 map use, 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.

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. The challenge for the instructors is to provide a robust, challenging, and stimulating academic experience within the broader milieu of the digital era.

All course materials will be organized through the Blackboard Course Management System. Core theoretical concepts will be presented via lectures, videos, and assigned readings, and augmented with active learning exercises. 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](mailto: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).

**COVID-19 policy** -- Students are expected to comply with all aspects of USC's COVID-19 policy including, but not limited to, vaccination, indoor mask mandate, and daily TrojanCheck. Failure to do so may result in removal from the class and referral to Student Judicial Affairs and Community Standards. Students are recommended to keep safe physical distancing, whenever possible, to prevent any possible transmission. Please contact your instructor if you have any safety concerns.

**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.

## **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. Students can 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*, 6<sup>th</sup> 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. 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.

## **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 instructors at the start of the semester. And see the USC ITS Student Toolkit here:

<https://keep-teaching.usc.edu/students/student-toolkit/>

*Desire2Learn (D2L)* – This course will utilize the Desire2Learn (D2L) learning management system which allows students to access course content, upload assignments, 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](mailto:spatial_support@usc.edu), making sure to copy (cc) the instructor on the email. Assignment specific questions should be directed to the instructors.

*Communications* – All assignments given 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(s) 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, as you would in a classroom laboratory.

Please post your questions about assignments there, as you would ask them publically 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. 2022. *GIS Fundamentals: A First Text on Geographic Information Systems*. 7<sup>th</sup> 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. 2021. *Getting to Know ArcGIS Pro 2.8*. Redlands, CA: Esri Press. Available for rent or purchase at: <https://vitalsource.com/products/getting-to-know-arcgis-2-8-michale-law-amy-collins-v9781589487024>

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](https://doi.org/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 Blackboard.

*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 Community Blackboard site. 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

## Assignment Submission Policy

Assignments must be submitted via Blackboard 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 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.

## Course Schedule

Week	Topic	Assignments & Readings	Deliverables/Due Dates
<b>Module 1: Introduction to Spatial Thinking</b>			
<b>Week 1</b> 8/22	<b>Introduction to Course and GIS</b> Introduction to class and use of geographic information systems	Resume Assignment 1; Reading and Research Discussion (RRD) 1; Project 1a and 1b;  Schuurman, Ch. 1	
8/24	<b>Fundamental Concepts</b> The important keywords and ideas that underlie spatial reasoning; Introduction to ArcGIS Pro and the SSI Server	Warf and Sui	
<b>Week 2</b> 8/29	<b>Spatial Data Models</b> An introduction to vector, raster and other data models plus data and file structures	Bolstad, Ch. 2	Resume Assignment 1 – Due Monday
8/31	<b>What's Special About Spatial?</b> The differences between spatial and non-spatial information, including spatial autocorrelation and spatial heterogeneity	Biehl et al.	
<b>Week 3</b> Monday, 9/5 is a university holiday	<b>No class Monday</b>		Project 1a – Due <b>Tuesday</b>
9/7	<b>Scale</b> Introduction to the key geographic concept of scale and its importance to the real-world spatial processes and the study of them	Sayre	
<b>Module 2: The Spatial Value Proposition</b>			

Week	Topic	Assignments & Readings	Deliverables/Due Dates
<b>Week 4</b> 9/12	<b>The Power of Maps and Critical GIS</b> The roles that maps have played throughout human history and the characteristics and uses of maps today	Harley; Pavlovskaya	
9/14	<b>RRD 1 Synchronous Discussion and Transportation Data</b> The spatial data used to support mobility, logistics, access, and related applications	RRD2  Bolstad, Ch. 7, pp. 299, 323-324; Zhang et al.	RRD 1 (synchronously, in class; asynchronously, before and after class session)
<b>Week 5</b> 9/19	<b>Land Use and Population</b> The spatial information used to support urban planning and social, governmental, and related applications	Bolstad, Ch. 3, 133-135; Leyk et al.	
9/21	<b>Environmental Data and the NWM</b> An introduction to key environmental data sets and their use in the National Water Model (NWM)	Bolstad, Ch. 7, pp. 305-323	
<b>Week 6</b> 9/26	<b>Finding Spatial Data</b> Visit from Data Visualization Specialist and Librarian Andy Rutkowski (needed for RRD 2 and RRD 3)	Project 2	Project 1b – Due Monday
<b>Module 3: Spatial Data Handling</b>			
9/28	<b>Geodesy, Datums, and Geographic Coordinate Systems</b> Role of geodesy and datums in studying and communicating our three-dimensional world	Bolstad, Ch. 3, 87-115	
<b>Week 7</b> 10/3	<b>Map Projections</b> An introduction to the effects of projecting the three-dimensional world and the benefits of doing so.	Bolstad, Ch. 3, 116-133 and Ch. 4 pp. 168-180	

Week	Topic	Assignments & Readings	Deliverables/Due Dates
10/5	<b>RRD 2 Synchronous Discussion and Projected Coordinate Systems and Transformations</b> The importance and utility of local and global projected coordinate systems	RRD3 Kimerling, Chs. 7-8 (skim)	RRD 2 (synchronously, in class; asynchronously, before and after class session)
<b>Week 8</b> 10/10	<b>Attribute Tables and Spatial Databases</b> The importance of attribute information associated with coordinates and options for storing spatial data	Project 3 Bolstad, Ch. 8	Project 2 – Due Monday
10/12* *10/13- 10/14 is university holiday	<b>Global Navigation Satellite Systems</b> Introduction to geolocation systems and uses	Bolstad, Ch. 5	
<b>Week 9</b> 10/17	<b>Aerial and Satellite Imagery</b> Introduction to passive and active remote sensing systems and the data they produce	Bolstad, Ch. 6	Mid-Term Exam (asynchronous): Two-hour window of student's choosing from Weds. 9am PT – Thurs. 9am PT
10/19	<b>Spatial Data Quality and Metadata</b> Methods for assessing the quality and utility of spatial data and the importance of metadata in light of various methods for collecting spatial data	Bolstad, Ch. 4, pp. 188-191; Ch. 7, pp. 303-304; Ch. 14; van Oort	
<b>Week 10</b> 10/24	<b>Volunteered and Crowdsourced Geographic Information</b> Introduction to methods for collecting spatial data from non-professionals and the benefits and drawbacks of doing so	Project 4 Bolstad, Ch. 7 (pp. 303-304); Senaratne et al.; Verplanke et al.	Project 3 – Due Monday
<b>Module 4: Turning Spatial Data into Actionable Information</b>			
10/26	<b>RRD 3 Synchronous Discussion and Terrain Analysis</b> Land surface parameters and their uses	RRD 4 Bolstad, Ch. 11;, 13 (pp. 601-602) Bamutaze	RRD 3 (synchronously, in class; asynchronously, before and after class session)

Week	Topic	Assignments & Readings	Deliverables/Due Dates
<b>Week 11</b> 10/31	<b>Introduction to Raster Analysis</b> The concept of map algebra and basic raster (local, zonal, global) functions	Bolstad, Ch. 10	
11/2	<b>Introduction to Spatial Analysis</b> Basic methods for using GIS to mathematically analyze spatial data	Bolstad, Ch. 9	
<b>Week 12</b> 11/7	<b>Cartography &amp; Modern Mapmaking</b> Best practices for creating finished mapping products; Cartographic principles and methods for visualizing spatial data online	Kimerling, Ch. 6; Clarke et al.	
11/9	<b>Spatial Modeling</b> An introduction to the variety of models that are used to understand and predict spatial phenomena	Project 5  Bolstad, Ch. 12, 521-535	
<b>Week 13</b> 11/14	<b>Spatial Estimation and Interpolation</b> Introduction to sampling and spatial interpolation methods	Resume Assignment 2  Skim: Kimerling, Ch. 6-8 Bolstad, Ch. 13 Kanevski	Project 4 – Due Monday
11/16	<b>RRD 4 Synchronous Discussion and Introduction to 3D Modeling and Automation Processes</b> Introduction to modeling our world in 3D and processes for automating spatial analysis.	RRD5  Bolstad, Ch. 13	RRD 4 (synchronously, in class; asynchronously, before and after class session)
<b>Module 5: Future of GI Science, Systems and Services</b>			
<b>Week 14*</b> 11/21	<b>Big Spatial Data and Geospatial Intelligence</b> An introduction to the variety of data created by widespread ownership and use of location-based services; incorporation of location-based analytics, terrain, and other data to implement actionable intelligence in support of human security	Levy et al. Salathé et al. Huang and Wang Marx	Resume Assignment 2 – Due Monday

Week	Topic	Assignments & Readings	Deliverables/Due Dates
*11/23-11/25 is a university holiday	<b>No class Wednesday</b>		
<b>Week 15</b> 11/28	<b>GIS Customization and Cloud Services</b> Introduction to GIS in the cloud and to programming languages and platforms for modeling spatial processes	Bolstad, Ch. 7 Steinger and Hunter	
11/30	<b>RRD 5 Synchronous Discussion and Looking Forward for GIS and Exam Review</b> The changing character and impact of GI science, systems, and services; Class wrap-up and review for final exam	Bodenhamer Miller & Goodchild	RRD5 (synchronously, in class; asynchronously, before and after class session)  Project 5 – <b>Due FRIDAY by 5:00pm</b>
<b>Final Exam</b> – Wednesday, December 7 – 11:00 am -1:00pm PT			

## 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*  
[eeotix.usc.edu](http://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.symplcity.com/care\\_report](http://usc-advocate.symplcity.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](http://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](http://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](https://dps.usc.edu), [emergency.usc.edu](https://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](https://dps.usc.edu)

Non-emergency assistance or information.

*Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)*  
[ombuds.usc.edu](https://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](mailto:otfp@med.usc.edu)*  
[chan.usc.edu/otfp](https://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 Online Students***

The Course Blackboard page and the GIST Community Blackboard page 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.