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

SSCI 683: Principles of Spatial Data Analysis

Units: 4

Term—Day—Time: Spring 2023, Fridays 11:00-1:50 pm

Location: CPA 110

Instructor: An-Min Wu, Ph.D.
Office: AHF B55B
Office Hours: Wednesdays 3:30 –4:30 p.m. and Thursdays 1:00 – 2:00 p.m. 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. Also available most days between 9 a.m. – 5 p.m. by appointment.

Contact Info: anminwu@usc.edu

Library Help: Andrzej (Andy) Rutkowski
Office: VKC Library 36B
Office Hours: By appointment
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IT Help: Myron Medalla
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Contact Info: spatial_support@usc.edu

Course Description

This course explores theoretical foundations, methods, techniques, and software systems for spatial data analysis. The course aims to provide students with the fundamental knowledge and hands-on skills necessary to investigate research questions, with a focus on population and health problems, using spatial analysis approaches. Including fundamental spatial concepts and the core components of geospatial data analysis techniques, this course intends to explore a broad range of principle spatial data analysis methods, from exploratory spatial data analysis and surface analysis, remote sensing to spatial statistics to network and locational analysis. The latest research in a variety of topics related to population, health, and place that are central to spatial analysis are also examined. Students will gain an in-depth understanding and hands-on experience in the ways to explore a variety of applications through a combination of homework, presentations and projects. Students will learn about the wide variety of geospatial data and analytical tools available, including how to find relevant data and transform it as needed so that it can be used for solving specific socio-economic challenges and problems.

Learning Objectives

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

- Describe key theoretical concepts of spatial analysis approaches.
- Evaluate spatial analysis approaches and techniques for working on research that investigate places and their roles in shaping environmental exposures, health-related impacts and outcomes, and the efficacy of health care delivery systems.
- Analyze spatial problems by applying appropriate and relevant spatial analysis techniques.

Prerequisite(s): None.
Co-Requisite (s): Students must be enrolled in an existing USC PhD program
Concurrent Enrollment: None
Recommended Preparation: Some experience in GIS software or GIS coursework (e.g. SSCI 581) is strongly recommended; contact the instructor if you have no prior experience in GIS.

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)

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 will be delivered with multiple methods including lectures, class discussion, presentations and hands-on practice. For the majority of the class meetings, the class will start with a group discussion for the readings relating to the previous week topic & lecture led by a fellow classmate for the first hour. The instructor will present the core topics for the second hour. The remaining time in the class will be hands-on practices related to the lecture topics covered or other in-class acitivites. Student participation is encouraged through reading discussions, hands-on practices, homework assignments, and class presentations.

Throughout the semester, hands-on practice and homework assignments provide students first-hand experience in spatial analysis using the software R and ArcGIS Pro, and reading assignments help students evaluate and integrate the information acquired from the weekly readings. Students will design and conduct final projects to learn more in-depth spatial analysis approaches in a specific topic of research interest and demonstrate their ability to apply appropriate spatial analysis methods in resolving problems related to population, health and place.

Technological Requirements

The course will be focused on using R and ArcGIS Pro. Students can access the software for course assignments using computing resources provided by the Spatial Sciences Institute. Students will be given login credentials and instructions to sign-in to the remote Spatial Sciences Institute Server for the required software.

Required Readings and Supplementary Materials

The required textbooks for this course are:

- de Smith, Michael J., Michael F. Goodchild, and Paul A. Longley. 2021. *Geospatial analysis: a comprehensive guide to principles, techniques and software tools* (6th Ed.). Winchelsea, UK: Winchelsea Press. (Available online: http://www.spatialanalysisonline.com/index.html.)
- O'Sullivan, David, and David Unwin. 2010. *Geographic Information Analysis*, 2nd Edition. New York, NY: John Wiley & Sons. (Available online via USC Libraries.)

Supplementary readings will be assigned from various sources and will be accessed via the USC Library's electronic collections and/or provided by the instructor via Blackboard, including:

- Adams, Marc A., Lawrence D. Frank, Jasper Schipperijn, Graham Smith, James Chapman, Lars B. Christiansen, Neil Coffee et al. 2014. "International variation in neighborhood walkability, transit, and recreation environments using geographic information systems: the IPEN adult study." International journal of health geographics 13, (1): 1-17.
- Ali, M. Z., H.J. Chu, & T.J. Burbey. 2020. "Mapping and predicting subsidence from spatio-temporal regression models of groundwater-drawdown and subsidence observations." *Hydrogeology Journal*, 28(8), 2865-2876.
- Baker, David M., and Alain-Jacques Valleron. 2014. "An open source software for fast grid-based data-mining in spatial epidemiology (FGBASE)." *International journal of health geographics* 13, (1): 46.
- Barreto, Moises Colares, Doris Kosminsky, and Claudio Esperança. 2018. "Hexagonal hierarchical cartogram: Towards a thematic map of Brazil." InfoDesign-Revista Brasileira de Design da Informação 15 (1): 45-62.
- Bartesaghi-Koc, Carlos, Paul Osmond, and Alan Peters. 2022. "Innovative use of spatial regression models to predict the effects of green infrastructure on land surface temperatures." *Energy and Buildings* 254: 111564.
- Brazil, N. 2021. "The multidimensional clustering of health and its ecological risk factors." Social Science & Medicine, 113772.

- Choi, Hyungyun and Ho Kim. 2017. “Analysis of the relationship between community characteristics and depression using geographically weighted regression.” Epidemiology and Health, 39.
- Cocci Grifoni, R., G. Caprari, & G.E. Marchesani. 2022. “Combinative Study of Urban Heat Island in Ascoli Piceno City with Remote Sensing and CFD Simulation—Climate Change and Urban Health Resilience—CCUHRE Project.” *Sustainability*, 14(2), 688.
- Dogru, Ahmet Ozgur, Ruusa Magano David, Necla Ulugtekin, Cigdem Goksel, Dursun Zafer Seker, and Seval Sözen. 2017. "GIS based spatial pattern analysis: Children with Hepatitis A in Turkey." *Environmental research* 156: 349-357.
- Hanna-Attisha, Mona, Jenny LaChance, Richard Casey Sadler, and Allison Champney Schnepp. 2016. “Elevated blood lead levels in children associated with the Flint drinking water crisis: a spatial analysis of risk and public health response." *American Journal of Public Health* 106 (2): 283-290.
- Harris, Nancy L., Elizabeth Goldman, Christopher Gabris, Jon Nordling, Susan Minnemeyer, Stephen Ansari, Michael Lippmann et al. 2017. “Using spatial statistics to identify emerging hot spots of forest loss.” *Environmental Research Letters* 12(2): 024012.
- Hohl, Alexander, Minrui Zheng, Wenwu Tang, Eric Delmelle, and Irene Casas. 2017. "Spatiotemporal point pattern analysis using Ripley’s K function." In *Geospatial data science: techniques and applications*. CRC Press, Boca Raton, FL.
- Jiang, Hong, and J. Ronald Eastman. 2000 "Application of fuzzy measures in multi-criteria evaluation in GIS." *International Journal of Geographical Information Science* 14, (2): 173-184.
- Kelly-Schwartz, A. C., J. Stockard, S. Doyle, & M. Schlossberg. 2004. “Is sprawl unhealthy? A multilevel analysis of the relationship of metropolitan sprawl to the health of individuals.” *Journal of Planning Education and Research*, 24(2), 184-196.
- Kwan, Mei-Po. 2018. "The limits of the neighborhood effect: Contextual uncertainties in geographic, environmental health, and social science research." *Annals of the American Association of Geographers* 108 (6): 1482-1490.
- Langford, Mitchel, Gary Higgs, and Richard Fry. 2016. "Multi-modal two-step floating catchment area analysis of primary health care accessibility." *Health & place* 38: 70-81.
- Liu, Qiannan, Zhiyun Ouyang, Ainong Li, and Weihua Xu. 2016. "Spatial Distribution Characteristics of Biomass and Carbon Storage in Forest Vegetation in Chongqing Based on RS and GIS." *Nature Environment and Pollution Technology* 15 (4): 1381.
- Louis, Valérie R., Revati Phalkey, Olaf Horstick, Pitcha Ratanawong, Annelies Wilder-Smith, Yesim Tozan, and Peter Dambach. 2014. “Modeling tools for dengue

risk mapping-a systematic review." *International Journal of Health Geographics* 13 (1): 50.

- Ma, Jing, Chunjiang Li, Mei-Po Kwan, and Yanwei Chai. 2018. "A Multilevel Analysis of Perceived Noise Pollution, Geographic Contexts and Mental Health in Beijing." International journal of environmental research and public health 15, no. 7: 1479–.
- Mobley, Lee R., Tzy-Mey Kuo, Matthew Urato, Sujha Subramanian, Lisa Watson, and Luc Anselin. 2012. "Spatial heterogeneity in cancer control planning and cancer screening behavior." *Annals of the Association of American Geographers* 102 (5): 1113-1124.
- Mulrooney, Timothy, Kathi Beratan, Christopher McGinn, and Benjamin Branch. 2017. "A comparison of raster-based travel time surfaces against vector-based network calculations as applied in the study of rural food deserts." *Applied geography* 78: 12-21.
- Nilsson, Pia. 2014. "Natural amenities in urban space – A geographically weighted regression approach." *Landscape and Urban Planning* 121: 45-54.
- Perchoux, Camille, Basile Chaix, Ruben Brondeel, and Yan Kestens. 2016. "Residential buffer, perceived neighborhood, and individual activity space: New refinements in the definition of exposure areas–The RECORD Cohort Study." *Health and Place* 40: 116-122.
- Rezaeian, Mohsen, Graham Dunn, Selwyn St Leger, and Louis Appleby. 2007. "Geographical epidemiology, spatial analysis and geographical information systems: a multidisciplinary glossary." *Journal of Epidemiology & Community Health 61* (2): 98-102.
- Shi, Xun, Jennifer Alford-Teaster, Tracy Onega, and Dongmei Wang. 2012. "Spatial access and local demand for major cancer care facilities in the United States." *Annals of the Association of American Geographers* 102(5): 1125-1134.
- Spencer, John, and Gustavo Angeles. 2007. "Kernel density estimation as a technique for assessing availability of health services in Nicaragua." *Health Services and Outcomes Research Methodology* 7: 145-157.
- Spielman, Seth E., and John R. Logan. 2013. "Using high-resolution population data to identify neighborhoods and establish their boundaries." *Annals of the Association of American Geographers* 103 (1): 67-84.
- Vaz, Eric, Michael Cusimano, and Tony Hernandez. 2015. "Land use perception of self-reported health: Exploratory analysis of anthropogenic land use phenotypes." *Land Use Policy* 46: 232-240.
- VoPham, Trang, John P. Wilson, Darren Ruddell, Tarek Rashed, Maria M. Brooks, Jian-Min Yuan, Evelyn O. Talbott, Chung-Chou H. Chang, and Joel L. Weissfeld. 2015. "Linking pesticides and human health: A geographic information system

(GIS) and Landsat remote sensing method to estimate agricultural pesticide exposure." *Applied Geography* 62: 171-181.

- Watson, Joss JW, and Malcolm D. Hudson. 2015. "Regional Scale wind farm and solar farm suitability assessment using GIS-assisted multi-criteria evaluation." *Landscape and urban planning* 138: 20-31.
- Weiss, D. J, A. Nelson, H. S. Gibson, W. Temperley, S. Peedell, A. Lieber, M. Hancher , E. Poyart, S. Belchior, N. Fullman and B. Mappin. 2018. "A global map of travel time to cities to assess inequalities in accessibility in 2015." *Nature* 553 (7688): 333.
- Yin, Chaohui, Man Yuan, Youpeng Lu, Yaping Huang, and Yanfang Liu. 2018. "Effects of urban form on the urban heat island effect based on spatial regression model." *Science of the Total Environment* 634: 696-704.
- Yu, Wenhao, Tinghua Ai, and Shiwei Shao. 2015. "The analysis and delimitation of Central Business District using network kernel density estimation." *Journal of Transport Geography* 45: 32-47.

Description and Assessment of Assignments

There are several different types of assignments due nearly each week in our course that make up a significant part of your final grade. These different types of assignments are described below.

Lead Class Discussion - 1 worth a total of 10%: Each student will lead one class discussion on the assigned readings once during the semester. Class discussion will focus on the theory and application of the methods as presented in the weekly readings. Each student discussion leader prepares for a 15-minute opening statement presentation followed by 3 questions raised from the presentation material for class discussion.

Written Reflection on Reading/Class Discussion – 10 worth a total of 15%. Students are expected to read all material outlined for each week before class, participating in in-class discussion led by a fellow classmate, and reflect on the material by responding to the questions asked by the discussion leader via online forum after class discussion within 72 hours. This written reflection aims to help the students evaluate and integrate the information acquired from the course readings and in-class discussion.

In-Class Engagement – a total of 12%. An in-class engagement grade for the semester will be assigned based upon student engagement in the class sessions including, but not limited to, in-class exercises, participations to in-class discussion, and feedback to student project ideas. Failure to attend, participate in class exercise, or not be adequately prepared to discuss the readings will lead to the assignment of a lower grade for that week.

Homework Assignments -- 3 worth a total of 21%: Students will be assigned a total of 3 homework assignments in this course. These hands-on assignments are to practice spatial analysis techniques explored in theory in the texts. You will analyze the data of your own

choice using ArcGIS and/or R scripts, and write a short report to answer the questions in each assignment.

Final Project

To integrate your learning of all the material covered in the course, in the final project, each student will conduct an independent research project. You will design, undertake, and report on a spatial analysis research project that will be the context of the assignments throughout the semester. The four components of the project will be due at different times throughout the semester. The grading rubric for each project component will be provided at the time the assignment is released. The four final project components include:

Project Idea Presentation - 4%. An in-class presentation for your final project idea, including the spatial questions you would like to investigate, how you plan to solve them, the data to be used for analysis, and expected outcomes.

Proposal - 8%. A proposal document developed from the project idea presentation, your background research, and the feedback received.

Final Presentation - 10%. A final presentation during the final week of the class session.

Report - 20%. A written report in the format of a research paper on your final project methodology and outcomes.

Grading Breakdown

Assessments	Number	% Each	Total % of Grade
In-class engagement	-	-	12
Lead class discussion	1	10	10
Written reflection on reading/class discussion	-	-	15
Homework assignments	3	7	21
Project idea presentation	1	4	4
Project proposal	1	8	8
Project presentation	1	10	10
Project report	1	20	20
Total	-	-	100

Assignment Submission Policy

Unless otherwise noted, assignments must be submitted via Blackboard by the due dates specified in the Course Schedule below and on the assignment instructions.

Students are expected to attend and participate in every class session and to complete and upload all assignments before the deadlines detailed in the Course Schedule. Late work will be assessed a penalty of 10% per day and zero grades will be assigned for work that is more than one week late.

Course Schedule: A Weekly Breakdown

	Topics	Readings & Assignments	Deliverables
Module 1: Concept Framework for Spatial Data Analysis			
Week 1 1/13	Introduction to course & spatial analysis conceptual framework	de Smith et al. (2018) Ch. 2 O'Sullivan & Unwin (2010) Ch.1 Rezaeian et al. (2007) Perchoux et al. (2016)	
Week 2 1/20* *Monday, 1/16 is university holiday	Geospatial data analysis potentials and problems	O'Sullivan & Unwin (2010) Ch.2 Spielman and Logan (2013) Kwan (2018) Homework Assignment 1	Sign-up for class presentations
Week 3 1/27	Maps for spatial analysis and processes	O'Sullivan & Unwin (2010) Ch.3 & 4 Mobley et al. (2012) Barreto et al. (2018)	
Module 2: Exploratory Analysis for Spatial Data			
Week 4 2/3	Point pattern analysis: density-based and distance-based	de Smith et al. (2018). Ch. 5-§5.2 & §5.4 Spencer and Angeles (2007) Yu et al. (2015) Hohl et al. (2017)	
Week 5 2/10	Spatial autocorrelation and local statistics	O'Sullivan & Unwin (2010) Ch.7 & 8 Vaz et al. (2015) Harris et al. (2017) Dogru et al. (2017)	Homework Assignment 1: due Tuesday, 2/7
Week 6 2/17	Classic regression for GIS and geographically weighted regression	de Smith et al. (2018). §5.6.1-5.6.3 Choi and Kim (2017) Nilsson (2014) Ali et al. (2020)	Project Idea Presentation/Discussion
Module 3: Scale and generalization of geospatial data			

	Topics	Readings & Assignments	Deliverables
Week 7 2/24* *Monday, 2/20 is university holiday	Multilevel linear regression and spatial autoregressive models I	Kelly-Schwartz et al. (2004) Ma et al. (2018) Homework Assignment 2	
Week 8 3/4	Spatial autoregressive models II	De Smith et al. (2018). §5.6.3-5.6.4 Yin et al. (2018) Bartesaghi-Koc et al. (2022)	
Week 9 3/10	Surface and Field Analysis	O'Sullivan & Unwin (2010) §9.4-9.5 Baker and Valleron (2014) Mulrooney et al. (2017)	Project Proposal: due Friday, 3/10
*3/12-3/19**	** 3/12-3/19 is Spring Recess*		
Module 4: Spatial Forecasting and Locational Intelligence			
Week 10 3/24	Suitability analysis: Weighted and fuzzy overlay	Jiang & Eastman (2000) Watson & Hudson (2015)	Homework Assignment 2: due Tuesday, 3/21
Week 11 3/31	Spatial accessibility	Weiss et al. (2018) Shi et al. (2012) Landford et al. (2016) Homework Assignment 3	
Week 12 4/7	Network analysis (Guest speaker: TBA)	Adams et al. (2014) Brazil (2021) Reading Assignment 3	
Week 13 4/14	Remote sensing for GIS application	VoPham et al. (2015) Liu et al. (2016) Grifoni et al. (2022)	
Week 14 4/21	Variogram & Spatial interpolations	O'Sullivan &Unwin (2010) §10.3-§10.4 de Smith et al. (2018). §6.5-§6.6 Louis et al. (2014) Hanna-Attisha et al. (2016)	Homework Assignment 3: due Tuesday, 4/18
Week 15 4/28* *Friday, 4/28 is the last day of class	Final Presentations		Final presentation during the class

	Topics	Readings & Assignments	Deliverables
Final Exam Week	TBD – Final report due date follows the University exam 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 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.