SSCI 412 (35667R), Geodesign Practicum

Syllabus

Units: 4

Term Day Time: Spring, 2024, Monday 2-5:30pm

Location: WPH B26

Instructor: Guoping Huang
Office: AHF B57B
Office Hours: Thursday 1-3pm, and by appointment via email.
Contact Info: guopingh@usc.edu, 213-740-0521,

Library Help: Andy Rutkowski
Office: VKC 36B
Office Hours: Thursdays, 10 am-12 pm PT
Contact Info: arutkows@usc.edu, see contact page on Blackboard for Zoom Room

IT Help: Myron Medalla
Office: AHF B56B
Office: By appointment via email
Contact Info: spatial_support@usc.edu,213-740-4415

Course Scope and Purpose

SSCI 412 is required for Geodesign majors and serves as the capstone course in the Geodesign curriculum. The aim of SSCI 412 is to provide students with a learning experience that requires them to apply critical and spatial thinking skills to effectively manage and deploy appropriate geospatial technologies to undertake a self-directed urban design challenge while producing spatially-informed and scientifically sound results. Students will synthesize technical comprehension of geospatial technologies with appropriate bodies of literature to investigate a local urban planning challenge and propose a design alternative. Students will engage Los Angeles as a living laboratory by participating in field trips and/or meetings with subject matter experts to examine and discuss design challenges, constraints, and opportunities.

The 2024 Geodesign Practicum examines the current Climate Action Plan 2045 recently published by Los Angeles County, and tries to spatialize many of the action items based on Geodesign principles. The Climate Action Plan 2045 is to combat climate change by reducing greenhouse gas emissions and adapting to its impacts. This plan aligns with state and global climate goals, addresses local environmental and health concerns, and fosters economic opportunities. It involves community engagement and long-term strategies to ensure a sustainable and resilient future for the county. However, the current plan does not have one single map in it, leading to questions regarding how these actions could be implemented. This course gives students an opportunity to work with the Department of Regional Planning, and use geospatial tools and data to make careful spatial plans to combat climate change in several key domains including transportation, open space, and land use.

The outline that follows provides the structure and rules that should be necessary to embark on this ambitious 15-week project. For a successful project, it is important that:

- Students operate as a professional team with support and guidance of instructor;
- All parties develop a high level of trust and spirit of collaboration;
- Students and faculty are responsive to clients while conducting independent research;
- Communication between parties is professional and frequent; and
- Students feel comfortable to make decisions, make mistakes, and learn from the experience.

Learning Outcomes

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

- Organize and execute a series of geographic data acquisition, analysis, and mapping tasks to address one or more real-world challenge.
- Demonstrate an ability to work in a team.
- Apply geospatial technologies and spatial reasoning skills to a course research project.
- Recommend a spatially-informed and data-driven design intervention on a predetermined urban design and planning challenge.

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): 2 from (ARCH 403 or PPD 425 or SOCI 314 or SSCI 483), SSCI 382
Co-Requisite (s): None
Concurrent Enrollment: None
Recommended Preparation: Student enrolled in the Geodesign major

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.

Course Structure

This course serves as a capstone class for students studying geodesign studies at USC where students work in one or more small groups on a large geospatial project of their choice throughout the entire semester. Students are taught a variety of skills related to project management, geospatial data handling, presenting, and research and writing. Students complete a series of assignments that are designed to evaluate their proficiency with the use of these various skills to build a series of geospatial project deliverables.

Workload **–** This is a four credit, one semester level course. Students should expect to spend 10-15 hours per week to complete the work in this class.

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).

Technology and Communication Requirements

ArcGIS is provided online via the GIST Server; hence, you do not need to install it on your own computer. In addition, we will provide laptops with image processing software and a variety of GPS and related data capture devices for the Catalina field component. At their home workspaces, 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://keepteaching.usc.edu/students/student-toolkit/

SSI Server and Tech Support – This course utilizes the SSI Server which is a virtual desktop giving access to many different professional software. If you are unable to connect to the server or experience any type of technical issues, send an email using your USC account to SSI Tech Support at spatial_support@usc.edu, making sure to copy (cc) me on the email.

Communications – All materials to be handed in will be submitted via Blackboard. It is each student's responsibility to stay informed about what is going on in our course. In addition to email about time-sensitive topics, any important announcements will be posted on the Announcement page in Blackboard. Be sure to check these each time you log onto Blackboard.

I will send via email through Blackboard any notices that are time sensitive. Please be sure that you read as soon as possible all email sent from Blackboard or from me. Do not ignore course email until the day before assignments are due. Also double check to be sure that email sent from the USC blackboard account does not go into your junk mail!

While I am usually on-line all day and will probably respond to emails from students very quickly, I will endeavor to respond to all email within 24 hours of receipt, aiming for no more than 72 hours delay. In the rare case when I expect to be off-line for more than 72 hours, I will post an announcement on the Blackboard site.

Required Readings and Supplementary Materials

The required textbooks and articles for this course are:

- Steinitz, C. 2012. *A Framework for Geodesign*. Redlands, CA, Esri Press.
- Berenson, K. 2018. *Managing Your Research Data and Documentation*. Washington, DC, American Psychological Association.
- Ruddell, D. M., Foster, K. 2018. GIS&T and Geodesign. The Geographic Information Science & Technology Body of Knowledge.
- International Geodesign Collaboration. 2023. Global Climate Geodesign Challenge. https://www-igcollab.hub.arcgis.com/pages/gcgc

Additional readings will be assigned according to the specific climate actions chosen by project groups.

Project Overview and Requirements

Academic Units and Grading

Students will work in groups but will be graded separately. It is *not* required that all students in a project receive the same grade.

At the end of the semester, students are required to complete self-evaluations and peer evaluations and submit them to their instructor by the last day of classes. The faculty will consider these evaluations in assigning grades.

Grades will not be assigned until the group has submitted and the instructor has approved the final report.

Student Time Commitment

Students should expect to devote, on average, 10 hours a week to the Group Project. This time includes class meeting time and field trips as appropriate for each project. Progress on Group Projects should be evenly allocated over the semester to avoid excess workload during the last few weeks.

Required Work Products

The required work products for each group include:
- A literature review and project proposal
- Proposal presentation
- Data and analysis documentation
- Final report, including an executive summary
- Presentation of the final report
- Peer evaluations

Data Distribution

Datasets and processed datasets that may have been obtained/derived during your work may be licensed or copyrighted or confidential. You should *not* make them available to third parties without authorization from your faculty advisor *and* the original source of data. Also, data should not be placed online unless the advisor and the owner of data have properly approved doing so.

Use of Human Subjects

Faculty and students that engage in research involving human subjects must first obtain prior approval from the Institutional Review Board (IRB). "Human Subject" means a living individual about whom an investigator (whether professional or student) conducting research obtains (i) data through intervention or interaction with the individual or (ii) identifiable private information. This means that even if you are just going to be conducting a survey, you MUST obtain IRB approval in advance. Approval is required no matter who you will be interacting with — even your friends or family!

Composition of Group Projects
Individual and group roles for the semester-long design challenge.

Group Members

Each student will be assigned to a group for the duration of the course. These groups will be selected by the instructor on the basis of expressed preferences and skills of the students.

Project Advisor

The instructor acts as the group advisor, and will actively monitor progress and provide assistance, expertise, guidance and project evaluations. Project leadership and management and the quality of the final product are the students' responsibilities. The advisor meets with the group each week during the studio-style class period. The advisor may arrange for travel and facilitate interactions with the client and help to guide the scope of the projects. The advisor may offer reactive advice, reacting to activities in the group and giving advice when asked. The advisor may also give proactive advice regarding possible productive avenues for progress or regarding deficiencies and deadlines. It is

important that students understand the role of the advisor and the limited, though important, role they play in directing the project.

Stakeholders and Clients

Projects will involve stakeholders (government agencies, industry, non-profits, and/or private citizens) and clients who have a considerable interest in the project and/or the resulting data. There may be confidentiality, proprietary data, legal, intellectual property, and/or political issues that will need to be carefully addressed by the student groups. Students must respect the privacy of these stakeholders in a professional manner. Any data provided by the client should be considered confidential, proprietary, and owned by the client.

Required Work Products
The following describes the required work products and deliverables for the semester-long design challenge.

Topic Investigation and Literature Review (15 points toward course grade)

Students will conduct background research on selected research topics relevant to their projects. One of the most important parts of this exercise is the background literature review. The literature review should focus on peer-reviewed literature (journal articles, chapters from edited books, scholarly books) and government reports (which are often not peer-reviewed but are performed by credible scientists) in addition to required readings for this course.

Project Proposal and Management Plan (15 points toward course grade)

Each group is required to prepare a proposal for the project based on the needs of the client, their skills and aptitudes, and the available data. The elements of the project proposal will be:
- Title Page
- Introduction
- Research Question(s)/Project Approach
- Literature Review (see above)
- Methods
- Deliverables and Timeline
- Management Plan (see below)
- Literature Cited

The Management Plan outlines a group's management structure and general plan for the form and function of their group. Ideally, the management plan will be completed within the first three weeks of the semester.

Data Collection and Report (20 points toward course grade)

Data management and organization is essential for the success of any research project in addition to the reproducibility of a given methodology. All the data sets for the project

should be organized properly in a thematic manner. Data quality and utility should be evaluated scientifically. Advanced techniques and tools should be used to maintain data integrity throughout the project. The Data Report should include the following items for each dataset: 1) a description of the dataset; 2) the spatial scale of analysis; 3) the temporal scale of analysis; 4) the source of the data; 5) at least one map you produced using ArcGIS representing the data; 6) a summary of variables available for analysis; 7) a description of any major strengths or weaknesses of the dataset; and 8) references for your data sources, including links as applicable.

Spatial Analysis and Documentation (20 points toward course grade)

Students will prepare and submit a report documenting the analytical processes and products three weeks before the Final Report is due. Tools and models created should be presented with information about input and output specifications. The relevance of analytical results and spatial decision-making should be discussed in the report.

Final Report (20 points toward course grade)

By the end of the spring semester, students must submit a final report of their group project. The final report provides a complete discussion of the project's goals, objectives, methodologies, accomplishments, and how the products could lead to better spatial decisions for building healthier and more sustainable communities.

Groups will present their results near the end of Spring semester. These presentations should be polished, professional, and accompanied by high-quality and error-free graphics.

Self and Peer Evaluation (10 points toward course grade)

Each individual in the group must complete a self-evaluation and peer evaluations and submit them to the instructor by the last day of classes of the semester. Templates for these reviews will be posted to the course website.

Project Evaluation

Student performance in a group project is evaluated and graded based on demonstrated depth of understanding, critical thinking, interdisciplinary approach, originality, resourcefulness, professionalism, and communication skills. Specific criteria that faculty advisors will use in assigning project grades include:

- A working understanding of the published literature and facts immediately relevant to the project. A literature review should be completed as part of the project proposal.
- A critical perspective on the quality and shortcomings of prior work relevant to the project. This should include an identification of attempts to answer similar questions in other contexts.

- A working understanding of the dimensions of the spatial, regulatory, scientific, and design issues of the project and an aggressive plan for integration of these perspectives into the project.
- Originality of analysis, problem formulation, and scope of work. This should be demonstrated throughout the project.
- Formation of working relationships with stakeholders and clients outside of USC. In some cases, outside advisors will be identified when the group project is proposed. In other cases, the students will have to identify stakeholders, sources of information, outside consultants, and/or experts who can provide benefit to the group project.
- Resourcefulness. Throughout the project, students are expected to demonstrate initiative in finding information, identifying tools necessary to achieve their scope, and/or seeking outside advisors as appropriate.
- Punctuality. Students are expected to deliver intermediate and final products on schedule.
- Communication skills. Oral presentations and written reports should be well organized, scholarly, and well communicated.
- Participation. Students are expected to participate and actively contribute in meetings, training sessions, and events.

Grading Breakdown

Assessment	Number	Total Points
Topic Investigation and Literature Review	1	15
Project Proposal and Management Plan	1	15
Data Collection and Report	1	20
Spatial Analysis and Report	1	20
Final Project Report and Presentation	1	20
Self and Peer Evaluation	1	10
TOTAL		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 will be submitted for grading via Blackboard by the due dates specified in the Course Schedule below.

Additional Policies

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 seven days late.

Course Schedule

	Topic	Readings and Assignments	Deliverables/Due Dates
Week 1 1/8	**Introduction to Class** Brief introductions coupled with a discussion of class goals, project overview, and course assignments.	(Steinitz,2012): pages 3-22 (Ruddell&Foster, 2018)	No deliverables.
Week 2 1/15* *Monday, 1/15 is a university holiday	**University Holiday** *University holiday, no class.		No deliverables.
Week 3 1/22	**Project Overview** Discuss project overview, brainstorm required skills, and project approach(es).	(Steinitz,2012): pages 25-91; (IGC,2023) Assigned: Topic Investigation and Literature Review	

Week 4 1/29	**Client Visit** Meet client and learn background and context for the semester-long design challenge. Group discussion and scope project. Discuss various aspects of organizing, managing, and executing a research project.	(Berenson, 2018): pages 3-40;	Submit Topic Investigation and Literature Review on blackboard by Friday.
Week 5 2/5	**Group Work** Provide reports on literature review and projects; citation management; and brainstorm screening criteria.	(Steinitz,2012): pages 93-178; (Berenson, 2018): pages 41-80; Assigned: Project Proposal and Management Plan	No deliverables.
Week 6 2/12	**Project Constraints** Discussion project constraints, literature reviews, assign stakeholder advocates, define stakeholder data topics, and stakeholder participation.	(Berenson, 2018) pages 81-104; (IGC, 2023)	Submit Management Plan on Blackboard by Friday.
Week 7 2/19* *Monday, 2/19 is a university holiday	**University Holiday** *University holiday, no class.		No deliverables.
Week 8 2/26	**Geodesign as Collaborative Decision-Making Framework** Students deliver briefings on their topic of investigation. Students work in groups to advance efforts on their selected research project.	(Steinitz, 2012) pages 179-201 (IGC, 2023) Assigned: Data collection and report	No deliverables.
Week 9 3/4	**Discuss process model and evaluation Systems** A discussion of process model with data and potential evaluation systems. Students work in groups to outline a design and plan for their projects.		Submit Data collection and report by Friday.
*3/11-3/17 is Spring Recess	**Spring Break** No class.	Assigned: Spatial Analysis and Documentation	No deliverables.
Week 10 3/18	**Client Update** Meet with client to discuss progress on design challenge project.		No deliverables.
Week 11 3/25	**Discuss Evaluations** Discuss how to evaluate existing processes, with which indicators		No deliverables.
Week 12 4/1	**Discuss Design and Planning Proposals**		

	Present intervention proposals. Students work in groups to advance efforts on their research project.		
Week 13 4/8	**Discuss Impacts** Discuss how to present impacts of interventions. Students work in groups to advance efforts on their research project.	Assigned: Final Presentation and Final Project Report	Submit Spatial Analysis and Documentation by Friday
Week 14 4/15	**Group Work Session** Students work in groups to advance efforts on their selected research project.		Submit Final Project Draft for review
Week 15 4/22	**Client Final Presentation** Design teams present their group projects, summarizing the topic of investigation, study area, data and methods utilized, findings, and conclusions.	Assigned: Self and Peer Evaluations	Submit Final Presentation on Blackboard by Friday
FINAL 5/6	**Final Project Report** Design teams submit their final project report.		Submit Final Project Report, Self and Peer Evaluations on Blackboard by Friday

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.