USCDornsife

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

SSCI 595 (35751D and 35757D), CAPSTONE - Applied Geospatial Intelligence Problem Solving

Syllabus

Units: 2

Term Day Time: Spring 2023, Thursday 9:00-10:50am

Location: AHF 145D and DEN@Dornsife

Instructor: Darren Ruddell, Ph.D. GISP
Office: AHF B57F
Office Hours: Mondays 11am-12pm and Thursdays 12-1pm PT, and also by appointment via email
Contact Info: druddell@usc.edu, 213-740-0521

Library Help: Andy Rutkowski
Office: LIPA B40-A
Office Hours: Thursdays 10am-12pm PT
Contact Info: arutkows@usc.edu

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

Course Scope and Purpose

This course is the capstone requirement for the Master of Science in Human Security and Geospatial Intelligence. This course is designed to provide students a hands-on problem-solving opportunity that requires them to employ knowledge and GEOINT skills in order to provide decision makers an informed recommendation involving a variety of human security settings. Threats to human security come in many forms – military operations, terrorist attacks, genocide, political violence, natural disasters, humanitarian crises, environmental risks, public health issues and food / resource accessibility challenges, among others – and this class leverages a variety of exposures to geospatial solutions for the intelligence community and intelligence products that support national security, disaster response, and humanitarian relief efforts.

This a graduate level course, so you should expect this class to be both academically robust and intellectually challenging. As graduate students you are expected to engage with the information you are learning and to explore the heady cauldron of ideas, opinion, and analysis that describe our collective effort to thoroughly interrogate the subject at hand. Learning arises from active engagement with the knowledge found in the reading materials and with one another. As in any graduate-level class, the instructor's role is that of a guide who keeps you on this path of discovery and you will find that you will learn much from your fellow classmates.

All course materials will be organized through D2L and delivered (in person) if/when at resident location. The main theoretical concepts will be provided through course notes and assigned readings. Assignments will give students an opportunity to internalize and apply the concepts and theory learned from readings. Some assignments require student interaction, all will benefit from it.

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.

Learning Objectives
When you have completed this course, you will be able to:

- Reinforce the understanding of geospatial intelligence applications of Human Security and GEOINT as related to government, industry, and academe.

- Design and implement strategies for capturing or sourcing geospatial intelligence data and any accompanying metadata.

- Critically evaluate the potential impacts of data quality on spatial analysis

and decision making to the intelligence community.

- Apply critical thinking, collaboration, and communication skills.

- Synthesize learning by preparing and presenting a project report on Geospatial Intelligence, tailored to a specific, real-world human security application.

Prerequisite(s) *[preferred order]***:** SSCI 581; SSCI 577; SSCI 587; SSCI 588, SSCI 579.
Prerequisite or Co-Requisite: SSCI 585.

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.

Technological and Communication Requirements

ArcGIS is provided online via the SSI Server; hence, you do not need to install it on your own computer. Instead, every student must have the following technology requirements:

- A computer with a fast Internet connection.

- A functional webcam and a microphone for use whenever a presentation or meeting is scheduled.

- An up-to-date web browser to access the Server

If a student does not have access to any of these, please speak with the instructor at the start of the semester. Also, see the USC ITS Student Toolkit here: https://keepteaching.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 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 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 – On the D2L site, I will post a series of discussion threads relevant to various sections of the course. Discussions provide a key means for student-to-student discussion and collaboration. 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

publicly in the classroom. I monitor the discussion threads and offer comments when necessary, but more importantly, consider the discussion board a key way to connect with your classmates and share your discoveries.

Required Readings and Supplementary Materials

Textbooks – There are two required texts for this course. Some (of the optional texts) are available online and some are available from the USC Bookstore or online outlets such as Amazon. We encourage you to acquire these books quickly since you will need these materials from the opening day of class.

- Clark, R. 2020. *Geospatial Intelligence – Origins and Evolution.* Georgetown Washington, DC: University Press (find at: http://press.georgetown.edu/book/georgetown/geospatial-intelligence).

- NGA (National Geospatial-Intelligence Agency, Office of Geospatial-Intelligence Management). 2018. *National System for Geospatial Intelligence: Geospatial Intelligence (GEOINT) Basic Doctrine.* Washington, DC: National Geospatial-Intelligence Agency Publication No. 1-0 (FREE download at https://www.nga.mil/ProductsServices/Pages/GEOINT-Basic-Doctrine-Publication.aspx)

The textbooks will be supplemented with course notes, videos, and a mixture of planned readings from academic journals, professional reports, and authoritative websites. The list below is a sample of some of the readings that may be used.

- Esri. 2012. ArcGIS for Emergency Management, An Esri White Paper – May 2012. Redlands, CA: Esri Press.

- Esri. 2014. GIS Platform for National Security, An Esri White Paper – July 2014, Redlands, CA: Esri Press.

- Esri. 2007. GIS Supporting the Homeland Security Mission, An Esri White Paper May 2007, Redlands, CA: Esri Press.

- Evans, Howard, James Lange, and James Schmitz. 2015. *The Phenomenology of Intelligence-focused Remote Sensing (selected readings).* Beavercreek, OH, Riverside Research.

- Gillespie, T., Chu, J., Frankenberg, E., Thomas, D. 2007. "Assessment and prediction of natural hazards from satellite imagery." *Progress in Physical Geography,* 31(5): 459-470.

- Lowenthal, M.M. (2016) *Intelligence: From Secrets to Policy* (7th Edition). Washington, DC, CQ Press.

- NRC (National Research Council) (2007) *Successful Response Starts with a Map:*

Improving Geospatial Support for Disaster Management. Washington, DC, National Academies Press.

- United States Geospatial Intelligence Foundation (USGIF 1). 2017. *Trajectory Magazine –Public Safety Edition.* Reston, VA: USGIF Press.

- United States Geospatial Intelligence Foundation (USGIF 2). 2018. *Building Resilient Communities Through Geospatial Intelligence.* Reston, VA: USGIF Press.

- United States Geospatial Intelligence Foundation (USGIF 3). 2019 (and previous years). *The State and Future of GEOINT*. USGIF, Herndon, VA, USGIF Press.

Description and Assessment of Assignments

Your grade in this course will be determined on the basis of several different assessment tools:

External Assignments (15%) – These will focus on the theory portion of the course as presented in the weekly readings. Their objective is to help you evaluate and integrate the information you have acquired from the course readings. Some of these will involve discussions and collaborative work and some will be individual efforts.

Discussion Forums (20%) – These will focus on varying combinations of theory and practice as well reviews of the project topics/progress. It is anticipated that you will contribute to and participate in a series of discussion threads via D2L and/or a shared Google doc (e.g. while at virtual events such as **GEOINT 2023**) throughout the semester.

Final Project (65%) – The final project will afford you the opportunity to work in small teams and demonstrate your ability to identify and rapidly investigate a real-world problem using the coursework you have completed thus far. Working in small teams, you will all make extensive use of geospatial data sources and analysis tools and will be required to define possible scenarios, identify key challenges, explore possible solutions and deliver a preferred and an effective solution for an important human security need or challenge in your final project. The final presentation will be done at either the GEOINT Symposium (or similar event) and/or out-brief to the client or customer.

Grading Breakdown

Careful planning and a serious, consistent commitment will be required for you to successfully navigate the various deliverables in this and other GIST courses. The table below summarizes the SSCI 595 course assignments and their point distribution:

Assignment	Number	Points Each	Total
Weekly Assignments			
Discussions	5	4	20
External Assignments	2	7.5	15
Team Project Components			
Proposal	1	10	10
Literature Report (D1)	1	10	10
Group Presentation (D2)	1	15	15
Final Report (D3)	1	30	30
TOTAL		**100**	**100**

And finally, it is important to note from the outset that: (1) you are expected to participate in every class session and to complete/upload all assignments at the time detailed; (2) late postings and assignments will be docked one grade and no grade will be given for postings or assignments turned in more than one week late; and (3) no written work will be accepted for grading after 5:00 p.m. PT on the last day of exams. Any exceptions to these turn-in assignments are only made by me in coordination with individual students. An example of an exception would be a student's illness or injury that reasonably prohibits course involvement/participation.

Assignment Submission Policy

Assignments will be submitted for grading via D2L using the due dates specified in the Course Schedule below.

Additional Policies

Workload – This is a two credit, one semester course. Students should expect to spend 6-8 hours per week during a fifteen-week period completing the work in this course.

Course Schedule: A Weekly Breakdown

	Topic	Readings	Deliverables/ Due Dates
Section I Weeks 1-2 1/9-1/20	**Geospatial Intelligence Context:** Review of the intelligence community, the players and their typical roles and responsibilities.	NGA (2018)	No Deliverables
Section II Weeks 3-4 1/23-2/3	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 1:** Real-world application of industry, government, and academe integration to a focused GEOINT problem.	NGA (2018) NRC (2007) USGIF (2019+)	Student Project Assessments
Section III Weeks 5-7 2/6-2/24	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 2:** Real-world application of industry, government, and academe integration to a focused GEOINT problem.	NGA (2018) NRC (2007) USGIF (2019+) Assigned Readings	Group Discussions # 1 and # 2 Project Assignment Develop and Finalize Topics
Section IV Weeks 8-9 2/27-3/17 (NOTE: This period also includes the Spring Break period)	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 3:** Real-world application of industry, government, and academe integration to a focused GEOINT problem.	NGA (2018) NRC (2007) USGIF (2019+) Assigned Readings	Complete Deliverable # 1 (Literature Report) from the Research Project description Group Discussion # 3 (Zoom)

Section V Weeks 10-11 3/20-3/31	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 4:** Real-world application of industry, government, and academe integration to a focused GEOINT problem.	NGA (2018) NRC (2007) USGIF (2019+) Assigned Readings	Observe previous GEOINT Forum and Submit External Assignment # 1 Begin Project Poster Preparation Group Discussion # 4
Section VI Weeks 12-14 4/3-4/21	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 5:** Real-world application of industry, government, and academe integration to a focused GEOINT problem.	NGA (2018) NRC (2007) USGIF (2019+) Assigned Readings	Observe previous GEOINT Playbacks and Submit External Assignment # 2 Group Discussion # 5 Final Project/Poster Preparation
Section VII Weeks 15-16 4/24-5/5	**Geospatial Intelligence - Applied Geospatial Intelligence Problem Solving 6:** Team presentations summarizing results and what was learned from the project.	None Assigned Readings	Final Project Delivered and Report Submitted (Possible GEOINT 2023 Symposium Attendance)

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.

Resources for Online Students

The course D2L site and the SSI 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.