

SSCI 577, Human Security and Disaster Management

Syllabus

Units: 4

Term Day Time: Spring 2021, Online

Location: Online

Instructor: Darren Ruddell, Ph.D. GISP

Office: AHF B57F

Office Hours: Mondays 11 am-12 pm and Thursdays 8-9 am PT, and by appointment via email.

Contact Info: druddell@usc.edu, 213-740-0521, see contact page on Blackboard for Zoom room

Library Help: Andy Rutkowski

Office: VKC 36B

Office Hours: Tuesdays 10 am-noon and Thursdays 4:30-5:30 pm PT

Contact Info: arutkows@usc.edu, 213-740-6390,
<http://bit.ly/andyhangout>

IT Help: Richard Tsung

Office: AHF 146

Hours of Service: By appointment

Contact Info: spatial_support@usc.edu, 213-821-4415

Course Scope and Purpose

This course is the introductory course to the Master of Science Degree in Human Security and Geospatial Intelligence. It is designed to provide students with the requisite baseline knowledge of the discipline that ultimately will translate into informed effective decision-making in 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.

Managing chaos and addressing complex emergencies are critical to global security. For example, major natural disasters (earthquakes, floods, hurricanes, etc...) increasingly impact large populations as people are living in more remote and higher density environments that align with regions of the world where hazards exist. This course examines the complex relationship between human security concerns (population growth, urbanization, stabilization, conflict, among other processes) and disasters – both manmade and natural – where resulting emergencies are increasingly impactful to human populations throughout the world. Students utilize quantitative and qualitative methods – including geospatial technologies – to gain insight into physical geography (where natural hazards exist), the subsequent impacts disaster events have on the human geographies (social world), and the importance of spatial sciences to help understand the interdependencies of both.

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 our 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. The challenge for us is to replicate such an academic experience within the milieu of "online learning".

All course materials will be organized through Blackboard. 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.

Learning Outcomes

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

- Demonstrate an understanding of the underlying processes that give rise to disasters such as earthquakes, floods, hurricanes, and more.
- Measure how society evaluates and confronts the dangers posed by these processes from a political, social, and ethical perspectives in your own words.
- Utilize geospatial technologies – and applications of the same – to visualize and analyze the sites of disasters along with the populations affected by these events.
- Evaluate the efficacy technological innovations that are allowing an increasingly large human population to monitor, predict, and warn society about impending disasters.

Prerequisite(s): None

Co-Requisite (s): None

Concurrent Enrollment: None

Recommended Preparation: None

Class Conduct

Harassment, sexual misconduct, interpersonal violence, and stalking are not tolerated by the university. All faculty and most staff are considered Responsible Employees by the university and must forward all information they receive about these types of situations to the Title IX Coordinator. The Title IX Coordinator is responsible for assisting students with supportive accommodations, including academic accommodations, as well as investigating these incidents if the reporting student wants an investigation. The Title IX office is also responsible for coordinating supportive measures for transgender and nonbinary students such as faculty notifications, and more. If you need supportive accommodations you may contact the Title IX Coordinator directly (titleix@usc.edu or 213-821-8298) without sharing any personal information with me. If you would like to speak with a confidential counselor, Relationship and Sexual Violence Prevention Services (RSVP) provides 24/7 confidential support for students (213-740-9355 (WELL); press 0 after hours).

Course Notes

This course aims to engage students in many dynamic processes, focused primarily on the relationships between disaster events and human populations. Student learning experiences are achieved through a combination of course readings, class assignments, laboratory exercises, and online discussions.

No make-up dates will be offered for assignments, so mark the appropriate dates on your calendars. If there is legitimate conflict, speak with a course instructor as soon as possible so we can make alternative arrangements.

Technological Proficiency and Hardware/Software Required

We have several technologies that will facilitate our course work and our interactions, despite our dispersed locations. These include:

Blackboard – All course materials and correspondence will be posted on the course Blackboard site. As a registered student, you will find this course will show up in your available classes no later than 12:00 noon, PT on the first day of classes. It is here that the day-to-day flow of the course will be recorded.

Discussion boards – On the Blackboard site, you will post a number of discussion threads related to various course topics. These threads are very important in terms of providing support to each other while working on class exercises to share hints and helpful tips, as you would do in a classroom setting. I will check the discussion threads periodically and offer occasional comments. Please send me an email directly if you have a question or concern that requires my immediate attention.

Live meetings and presentations – You will use a browser-based service called Bluejeans to create synchronous, interactive sessions. With voice and webcam capabilities, Bluejeans can be used to share presentations and even our desktops between two or more people.

Individual meetings – Bluejeans is best for individual meetings.

SSI server and tech support – This course will utilize the SSI Servers to provide you with your own virtual desktop. If you are unable to connect to the server or experience any type of technical issues, send an email to SSI Tech Support at spatial_support@usc.edu and make sure to copy (cc) me on the email. SSI Tech Support is available Monday through Friday, 9:00 a.m. to 5:00 p.m. PST. A variety of geospatial software platforms (ArcGIS, e-Cognition, Idrisi, etc.) are provided online via the SSI Server; hence, you do not need to install it on your own computer.

Technical Requirements - Every student must satisfy the following technology requirements: (1) a computer with a fast Internet connection; (2) a functional webcam and a microphone for use whenever a presentation or meeting is scheduled; and (3) a modern web browser.

Students will be introduced to geospatial technologies by utilizing Esri services and products. This course will use ArcGIS Online (AGOL) to investigate human populations and natural hazards whereby students will locate and explore various spatial datasets that offer unique and innovative insights in hazards research. As mentioned previously, the modeling software and geospatial data required for course assignments will be accessed using computing resources provided by the Spatial Sciences Institute.

Required Readings and Supplementary Materials

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

- Greene, R W. 2004. *Confronting Catastrophe: A GIS Handbook*. Redlands, CA: Esri Press.
- Smith, Keith. 2013. *Environmental Hazards: Assessing Risk and Reducing Disaster, 6th Edition*. NY, NY: Routledge, 504 pp.
- Sui, D. 2008. *Geospatial Technologies and Homeland Security (DO NOT PURCHASE - selected readings will be provided)*. College Station, TX: Springer.
- 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.

These textbooks will be supplemented with Course Notes and a mixture of supplemental readings from academic journals, professional reports, and authoritative websites.

Supplemental Readings – The following book chapters, journal articles, white papers, etc... will be posted to Blackboard under Course Documents:

- Alcántara-Ayala, I., Altan, O., Baker, D., Briceño, S., Cutter, S., Gupta, H., Holloway, A., Ismail-Zadeh, A., Jiménez Díaz, V., Johnston, D., McBean, G., Ogawa, Y., Paton, D., Porio, E., Silbereisen, R., Takeuchi, K., Valsecchi, G., Vogel, C., Wu, G., and Zhai, P. 2015. *Disaster Risks Research and Assessment to Promote Risk Reduction and Management*. ICSU-ISSC Press.
- Crooks, A., Croitoru, A., Stefanidis, A., and Radzikowski, J. 2013. “#Earthquake: Twitter as a Distributed Sensor System.” *Transactions in GIS*, 17(1): 124-147.
- Cutter, S. 2013. “Building Disaster Resilience: Steps Toward Sustainability.” *Challenges in Sustainability*, Volume 1; Issue 2, 72-79.
- 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.
- 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.

Description and Assessment of Assignments

Weekly Assignments

There are several different kinds of assignments with at least one due weekly. These are described in the Weekly Folders on Blackboard. Due dates are shown in the summary that follows.

Introduction (1%) – Take a moment and introduce yourself to the class by posting a thread on the Blackboard course website that shares your background, experience, and interest in Geospatial Intelligence.

Resume (2%) – We require all current students to post and maintain a public resume, short biography and recent photo on our shared GIST Student Community Blackboard site. With your permission, your photo and resume will be posted to the Spatial Sciences Institute website and your resume will be included in the SSI Resume Book. The latter is compiled annually and along with our web presence used to promote our programs and more importantly, your skills, experience, and professional aspirations.

Reading Assignments (20%): Students will be required to complete five reading assignments comprised of quantitative and/or qualitative analysis to gain insight on the processes underlying disasters as well as examine the impact these events have on human populations. An optional additional reading will be provided late in the course for students to complete. If a student completes this optional reading assignment, the grade assessed will only be used to replace a Reading Assignment grade of lower value.

Disaster Log (20%): Students will be required to keep a journal of four significant disaster events that happened over the course of the semester that made media headlines. This assignment will require students to locate and evaluate technical information from online agency sites such as the National Geospatial-Intelligence Agency, the U.S. Geological Survey (USGS), and the National Oceanic and Atmospheric Administration (NOAA).

Laboratories/Exercises (20%): Students will complete four required laboratories/exercises that will utilize Esri's ArcGIS Online to gain insight and experience observing, mapping, analyzing, and interpreting spatial data on natural hazards and disasters.

After Action Report (12%): Students will complete an After Action Report on one specific disaster event of their choice. Additional background and exploration regarding these types of events will be reinforced by participating in virtual field trip(s) in the California area. The report will draw upon course lectures, discussions, readings, and outside sources to organize and deliver a summary of the disaster event and its associated impacts on the affected human population. The report is limited to 10 pages in length (with 12-point font, 1 inch margins, single-spacing for text) and will mostly comprise of maps, tables, and other graphics as well as a list of references. The report will then be "translated" into Esri's StoryMap tool and posted publicly.

Final Team Project (25%): The cumulative final project will consist of an integrative project that will require students to reflect on all aspects of the course, which includes course readings, online discussions, class assignments, and laboratory exercises. Student teams will be expected to use unique, new software in completing this project and then Esri’s StoryMap tool to deliver an oral presentation of their project during the final exam period.

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 577 course assignments and their point distribution:

Assessment	Points	Total	% of Grade
Introduction	1 @ 1 pts	1	1
Resume	1 @ 2 pts	2	2
Reading Assignments (RA)	5 @ 4 pts	20	20
Laboratory Exercises (L)	4 @ 5 pts	20	20
After Action Report	1 @ 12 pts	12	12
Disaster Log	1 @ 20 pts	20	20
Final Team Project	1 @ 25 pts	25	25
Total		100	100

And finally, it is important to note from the outset that: (1) you are expected 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 two weeks late; and (3) no written work will be accepted for grading after 5:00 p.m. PT on the last day of classes. Any exceptions to these rules for meeting deadlines 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 Blackboard using the due dates specified in the Course Schedule below.

Additional Policies

Communications – This is a distance learning course, so most of our interactions will be asynchronous (not at the same time). All materials to be handed in will be submitted via the Blackboard Assessment link. I will also create multiple Blackboard discussion forums throughout the semester that we will use for the aforementioned assignments and so we can discuss issues and comments on the course assignments, exercises, and projects as the need arises.

In addition, I will send via e-mail through Blackboard any notices that are time sensitive. Please be sure that you read as soon as possible all e-mail sent from Blackboard or from

me. Check now to make sure that mail sent from both the USC Blackboard accounts and my official email (druddell@usc.edu) does not go into your junk mail.

While I am usually online and will probably respond to e-mails from students relatively quickly, I will endeavor to respond to all e-mail within 24 hours of receipt, aiming for no more than 48 hours delay. In the rare case when I expect to be offline for more than 60 hours, I will post an announcement on the Blackboard site.

That said, it is each student's responsibility to stay informed about what is going on in our course. In addition to e-mail 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.

Workload – This is a four credit, one semester course. Students should expect to spend 12-15 hours per week completing the work in this course.

Course Schedule: A Weekly Breakdown

	Topic	Readings and Assignments	Deliverables/Due Dates
Week 1 1/18* *Monday, 1/18 is a University holiday	Introduction to Human Security and Disasters The chaotic world we live in and how we manage it is introduced and discussed.	Readings: Smith - Intro; Green - i-xxiv. Assignment: Introduction.	No deliverables.
Week 2 1/25	Introduction to Natural Hazards and Disasters Introduction to natural hazards and associated impacts on society. Discussion question: What does human security and disasters have to do with human values?	Readings: Smith - Ch. 1; USGIF 2 – Foreword and EXSUM. Assignment: RA1.	Introduction. Due 1/25
Week 3 2/1	Hazard in the Environment Introduction to environmental disasters. Discussion questions: What do hazard, risk, vulnerability, and disaster mean? How are these terms measured?	Readings: Green - Ch. 1; Supplemental Readings 4, 5, and 6. Assignment: L1.	RA1. Due 2/1
Week 4 2/8	Dimensions of Disasters and Emergencies A discussion on disaster – archives, time periods, and spatial patterns. Discussion question: What are some problems with disaster data and measurement?	Readings: Smith - Ch. 2; Supplemental Reading 7. Assignments: RA2. Disaster Log – Entry 1.	L1. Due 2/8
Week 5 2/15*	Complexity, Sustainability, and Vulnerability A discussion on complexity science; drivers of vulnerability and sustainability.	Readings: Smith - Ch. 3; Green – Appendix A. Assignment: L2.	RA2. Due 2/16

*2/15 is a University holiday	Discussion question: What is meant by “Behavioral Approaches” to disaster research?		
Week 6 2/22	Risk Assessment and Management A discussion on risk perception. Discussion questions: Why is perception important and what factors influence perception? How is risk different from disaster and vulnerability?	Readings: Smith - Ch. 4; Supplemental Reading 1. Assignment: RA3. Disaster Log – Entry 2.	L2. Due 2/22
Week 7 3/1	Reducing the Impacts of Disaster A discussion on mitigation and adaptation strategies to reduce the impacts of disaster. Discussion questions: What is meant by “coping” and how is coping related to livelihoods? Why is the sequence of coping strategies important for disaster management?	Readings: Smith - Ch. 5; Greene - Ch. 2 & 3. Assignment: L3.	RA3. Due 3/1
Week 8 3/8	Earthquakes and Volcanic Eruptions A discussion on plate tectonics and the impacts of earthquakes and volcanic eruptions. Discussion questions: To what extent is earthquake preparedness a public or private concern? How does the frequency and magnitude of earthquake damage affect risk perceptions, behavior, and policy?	Readings: Smith Ch. 6 (minus section on tsunamis) and Ch. 7. Virtual Field Trip #1: Earthquakes. Resume. Disaster Log – Entry 3. Assignment of After Action Report (AAR).	L3. Due 3/8
Week 9 3/15	Severe Tropical Storm Disasters A discussion on tropical cyclones – formation, classification, areas of risk, storm damage. Discussion questions: What are some of the structural causes of the Katrina disaster? What is the “safe development paradox”?	Readings: Smith Ch. 9; Supplemental Reading 3. Assignment: RA4.	Resume. Due 3/15 Disaster Log “Azimuth Check”. Due 3/15
Week 10 3/22	Floods and Tsunamis An introduction to thunderstorms and the feedback loop between human development and flooding. Discussion questions: What social processes increase human exposure to flooding and coastal storm impacts? What responsibility do the national, regional and local governments (taxpayer) have to protect individuals from flood risk?	Readings: Smith Ch. 11; Greene Ch. 4. Assignment: L4. Disaster Log – Entry 4. Assignment of the Final Team Project will be made by the end of Week 10.	RA4. Due 3/22
Week 11 3/29	Wildfires An introduction to heat waves and wildfires.	Readings: Smith Ch. 10 (pp. 268-272 and 286-	L4. Due 3/29

	Discussion questions: What is the wildland-urban interface (WUI)? How does the WUI make controlling fire hazards particularly difficult? How is vulnerability to wildfire related to human values and desires?	298); Greene Ch. 5; Supplemental Reading 2; USGIF 1. Virtual Field Trip #2: Wildfires and Hurricanes. Assignment: RA5.	
Week 12 4/5	Droughts A continuing discussion of heat wave and impacts of drought. Discussion questions: Why does the definition of a drought vary according to geography and economic activity? What are some direct and indirect impacts of drought disasters?	Reading: Smith Ch. 12. Virtual Field Trip #3: Drought.	RA5. Due 4/5 Disaster Log. Due 4/7
Week 13 4/12	Environmental Disasters in a Changing World A discussion of disease epidemics, climate change effects, and options for the future. Discussion questions: Why is climate change a “complex hazard/disaster”? What can we learn from disasters research to help address climate change?	Readings: Smith Ch. 10 (pp 273-283) and Ch. 14. Supplemental Reading 4. Assignment: RA6 * (Optional – used to improve grade).	After Action Report. Due 4/12 Final Project (Team Proposal). Due 4/14
Week 14 4/19	Technological and Environmental Disasters A discussion on “man-made accidents” and case studies showing societal impacts. Discussion questions: In what ways are biological and/or chemical disasters different from other disasters? What people are particularly vulnerable to technological disasters and why?	Readings: Smith Ch. 13; selected readings from Sui; USGIF 2 (pp 4-17).	RA6. Due 4/19 Final Project (Team Data Report). Due 4/21
Week 15 4/26* *Friday, 4/30 is the last day of class	Terrorism, Armed Conflict, and WMD. A discussion on “man-made disasters”. Discussion questions: In what ways are terrorist events, armed conflict, and WMD different from other disasters? What people are particularly vulnerable to these security concerns and why?	Selected readings from Sui; USGIF 2 (pp 18-29).	Final Project (Team Presentation). Due 4/26
Final Exams 5/5-12	Final Projects Student teams deliver final project written report.	Continuation of Final Team Project.	Final Project (Written Report). Due 5/10

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. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

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

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 and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of 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

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

uscса.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

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, emergency.usc.edu

Provides safety and other updates, 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

Non-emergency assistance or information.

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.