SSCI 483, Spatial Sciences Practicum

Syllabus

Units: 4

Term—Day—Time: Spring, 2017, Tuesday, 2:00-5:50 p.m.

Location: Spatial Sciences Institute, AHF 145D

Instructor: Darren Ruddell, Ph.D. GISP
Office: AHF B57F
Office Hours: Tuesdays, 9 – 10 a.m. and Wednesdays, 11 a.m. – 12 p.m.
Contact Info: druddell@usc.edu, 213-740-0521

Library Help: Katharin Peter
Office: VKC B40A
Office Hours: By appointment
Contact Info: klpeter@usc.edu, 213-740-1700 (office)

IT Help: Richard Tsung
Office: AHF 146
Hours of Service: Mondays to Fridays, 9:00 a.m.-5:00 p.m.
Contact Info: ctsung@usc.edu, 213-821-4415
Course Description
The spatial sciences, which leverage Geographic Information Science (GIS) and associated technologies are computer-based tools used to acquire, organize, analyze, model, and visualize spatial data, have emerged as one of the most important and fastest growing fields in the academy during the past decade. These technologies represent a broad suite of tools (GIS, GPS, remote sensing, etc.) that are now routinely deployed by scholars across a range of disciplines to study physical and social phenomena as disparate as natural disasters, groundwater flows, health epidemics, migration patterns, urban poverty, among other topics.

SSCI 483, an advanced course in the GeoDesign curriculum – required for GeoDesign majors and students pursuing the Spatial Studies minor – aims to provide the critical and spatial thinking skills required to effectively manage and deploy the aforementioned geospatial technologies to tackle a self-directed topic of interest while producing spatially-informed and scientifically sound results. Students will be required to synthesize technical comprehension of geospatial technologies with appropriate bodies of literature to investigate a local urban design challenge and propose a design alternative. Students will engage Los Angeles as a living laboratory by participating in field trips and meetings with subject matter experts to examine and discuss design challenges, constraints, and opportunities.

This course is designed to serve several different students from a variety of backgrounds (e.g., anthropology, architecture, geography, geology, international relations, planning, political science, sociology). Each audience is encouraged to utilize course assignments and the self-directed research project to explore geospatial resources and computational techniques, such as data modeling, spatial analysis, and data visualization learning with their own academic and professional goals.

Learning Objectives
Students who excel in SSCI 483 will be able to:

- Demonstrate the ability to design and execute a series of geographic data acquisition, analysis, and mapping tasks to address one or more real-world challenge.
- Demonstrate advanced facility with one or more of the core geospatial technologies (GIS, GPS, remote sensing, etc.)
- Demonstrate an ability to work in teams and to apply geospatial technology and spatial reasoning skills to a course research project.

Prerequisite(s): SSCI 382
Co-Requisite(s): None
Concurrent Enrollment: None
**Recommended Preparation:** Student enrolled in the GeoDesign major or Spatial Studies minor

**Course Notes**
This course serves as a capstone class for students studying spatial 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 to do with project management, geospatial data handling, presentation, research and writing, and 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.

**Technological Proficiency and Hardware/Software Required**
The modeling software and geospatial data required for course assignments will be accessed using computing resources provided by the Spatial Sciences Institute.

**Required Readings**
The required textbooks for this course are:

**Description and Assessment of Assignments**
Your grade in this class will be determined on the basis of several different assessments:

**Homework Assignments** (30%): Students will be required to complete six homework assignments drawn from lectures, assigned readings, guest speakers, among other sources to gain insight on human-environment interaction issues and spatial decision support systems for urban planning and design.

**Scope of Work, Initial Draft** (5%): The Scope of Work, Initial Draft assignment is your first articulation of your research project. In roughly one to two pages, this statement of research interest should discuss the topic of investigation, its importance to human and/or ecological systems, the spatial scale of interest, and any current findings or research on this subject matter.

**Gantt Chart** (5%): Construct a Gantt chart outlining a schedule to complete your research project. A well-constructed and thoughtful submission will include timelines and relationships between activities for the various components of your research project.

**Scope of Work, Revised Draft** (5%): Prepare a revised Scope of Work that incorporates the various comments and suggestions offered by your instructor and classmates. In no more
than two pages, discuss the items outlined in the initial scope of work, and make sure to include a data report that identifies at least three specific datasets that will be utilized in the research project.

**Poster (Group) (15%)**: The poster assignment is to complete a large-format scientific poster (48 by 60 inch maximum dimensions) that describes your project goals, data and analytical methods, results, and conclusions.

**Final Presentation (20%)**: Students will prepare and deliver a group oral presentation in powerpoint format that articulates the topic of investigation, the methods and geospatial data used, what worked and what did not work, the results that were generated, and what was learned while completing the research project. Each member of the group must take part of the presentation and the entire presentation can take no longer than 20 minutes. An additional 10 minutes will be provided for the group members to answer questions from the audience and the overall grade awarded for this assignment will be based on the quality of their presentations and their answers to questions from the audience.

**Final Project Report (20%)**: The final project report is the capstone assignment for this course, and it covers much of the same material as the posters and presentations but using a different format. The timing is such that the students will be able to use the feedback received from the two prior assignments to help shape the project aims, methods and data sources, results, discussion and conclusions. These reports are limited to 12 pages (with 12-point font, 1 inch margins, single-spacing for text) and will include one or more maps, tables, and other diagrams as well as a list of references.

**Grading Breakdown**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Number</th>
<th>Points Each</th>
<th>Total Points</th>
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<tbody>
<tr>
<td><strong>Weekly Assignments</strong></td>
<td></td>
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<tr>
<td>Homework Assignments</td>
<td>6</td>
<td>5</td>
<td>30</td>
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<tr>
<td><strong>Project Components</strong></td>
<td></td>
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<tr>
<td>Scope of Work, Draft</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Gantt Chart</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Scope of Work, Revised Draft</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Poster</td>
<td>1</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Final Presentation</td>
<td>1</td>
<td>20</td>
<td>20</td>
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<tr>
<td>Final Project Report</td>
<td>1</td>
<td>20</td>
<td>20</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>12</td>
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<td>100</td>
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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: A Weekly Breakdown

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Readings and Assignments</th>
<th>Deliverables/Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/10</td>
<td>Introduction to Class</td>
<td>Reading: Steinitz Part 1 (pages 3-22)</td>
<td>No deliverables.</td>
</tr>
<tr>
<td>2</td>
<td>1/17</td>
<td>Project Management; Research Project Topic</td>
<td>Reading: Steinitz Part 2 (pages 25-91); McHarg pages 1-29 Assigned: Homework Assignment 1</td>
<td>No deliverables.</td>
</tr>
<tr>
<td>3</td>
<td>1/24</td>
<td>Field Trip – Site Visit</td>
<td>Reading: Austin and Yu Assigned: Homework Assignment 2</td>
<td>Submit Homework Assignment 1 on Blackboard no later than 2:00 p.m. on Tuesday, 1/24.</td>
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<td>4</td>
<td>1/31</td>
<td>Software Architecture, Guest Speaker, and Urban Systems</td>
<td>Reading: McHarg pages 31-93 Assigned: Homework Assignment 3</td>
<td>Submit Homework Assignment 2 on Blackboard no later than 2:00 p.m. on Tuesday, 1/31.</td>
</tr>
<tr>
<td>5</td>
<td>2/7</td>
<td>Decision Support Systems; Group Presentations; and System Function</td>
<td>Reading: McHarg pages 95-173 Assigned: Homework Assignment 4</td>
<td>Submit Homework Assignment 3 on Blackboard no later than 2:00 p.m. on Tuesday, 2/7.</td>
</tr>
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<td>6</td>
<td>2/14</td>
<td>Fundamental Geographical Concepts and Guest Speaker</td>
<td>Reading: Steinitz Part 3 (pages 93-178) Assigned: Homework Assignment 5</td>
<td>Submit Homework Assignment 4 on Blackboard no later than 2:00 p.m. on Tuesday, 2/14.</td>
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| Week 7  | 2/21 | **The Rapid Evolution of the Esri ArcGIS Ecosystem**  
A discussion on the role of ArcGIS Desktop, ArcGIS Online, and ArcGIS Professional nowadays and moving forward. Students provide update on system assessment and evaluation. Students organize into design teams. | Reading: McHarg pages 175-197  
Assigned: Scope of Work, Draft | Submit Homework Assignment 5 on Blackboard no later than 2:00 p.m. on Tuesday, 2/21. |
|---|---|---|---|---|
| Week 8  | 2/28 | **Project Update and Group Work Session**  
Students deliver briefings on their topic of investigation. Students work in groups to advance efforts on their selected research project. | Reading: Steinitz Part 4 (pages 179-201)  
Assigned: Gantt Chart | Submit Scope of Work, Draft on Blackboard no later than 2:00 p.m. on Tuesday, 2/28. |
| Week 9  | 3/7 | **Poster Design and Planning**  
A discussion of expectations and requirements for the group poster. Students work in groups to outline a design and plan for their posters. | Assigned: Scope of Work, Revised Draft  
Assigned: Poster | Submit Gantt Chart on Blackboard no later than 2:00 p.m. on Tuesday, 3/7. |
| 3/14* | | Spring Recess | | |
| Week 10  | 3/21 | **Field Trip**  
Visit to Avalon Del Mar Metro Station to observe transit oriented development (TOD). | | Submit Scope of Work, Revised Draft on Blackboard no later than 2:00 p.m. on Tuesday, 3/21. |
| Week 11  | 3/28 | **Poster Display and Group Work Session**  
Design teams display and present their draft posters to the class. Students work in groups to advance efforts on their research project. | Assigned: Homework Assignment 6 | Submit Poster on Blackboard no later than 2:00 p.m. on Tuesday, 3/28. |
| Week 12  | 4/4 | **Data Report**  
Design teams provide update on their group research projects and present data reports to the class. | Assigned: Final Presentation and Final Project Report | Submit Homework Assignment 6 on Blackboard no later than 2:00 p.m. on Tuesday, 4/4. |
| Week 13  | 4/11 | **Draft Presentation**  
Design teams deliver draft presentation of their research project. | | No deliverables. |
| Week 14  | 4/18 | **Group Work Session**  
Students work in groups to advance efforts on their selected research project. | | No deliverables. |
| Week 15  | 4/25 | **Final Presentations**  
Design teams present their group projects, summarizing the topic of investigation, study area, data and methods utilized, findings, and conclusions. | | Submit Final Presentation on Blackboard no later than 2:00 p.m. on Tuesday, 4/25. |
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 Section 11, *Behavior Violating University Standards* [https://policy.usc.edu/student/scampus/part-b/](https://policy.usc.edu/student/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](http://policy.usc.edu/scientific-misconduct).

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* [http://equity.usc.edu](http://equity.usc.edu) or to the *Department of Public Safety* [http://adminopsnet.usc.edu/department/department-public-safety](http://adminopsnet.usc.edu/department/department-public-safety). This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Relationship and Sexual Violence Prevention Services* [http://engemannshc.usc.edu/rsvp/](http://engemannshc.usc.edu/rsvp/) provides 24/7 confidential support, and the sexual assault resource center webpage [http://sarc.usc.edu](http://sarc.usc.edu) describes reporting options and other resources.

**Support Systems**
A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* [http://dornsife.usc.edu/ali](http://dornsife.usc.edu/ali), which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* [http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html) provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* [http://emergency.usc.edu](http://emergency.usc.edu) will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

**Academic Accommodations**
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP and it should be delivered to

| FINAL 5/9 | Final Project Report Design teams submit their final project report. | Submit Final Project Report on Blackboard no later than 2:00 p.m. on Tuesday, 5/9. |

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me early in the semester. DSP is located in STU 301 and is open from 8:30am to 5:00pm, Monday through Friday (213-740-0776; study@usc.edu).